Chemical Week

April 27, 1957

Price 35 cents

Process industry

capital spending

for 1957 will be

above

earlier estimates.

Chemical spending

will be $1.91 billion,

31% above 1956

. . . p. 34

Aluminum plant's impact on small West Virginia town brings problems—and solutions . . . . . p. 46

Market researching shows big growth; here's what's happening in this booming field . . . . p. 68

Now it's urethane coatings, as National Aniline finds a key to nonyellowing materials . . . p. 84

Novel catalyst system is key to Carbide process for making a sorbic acid raw material . . p. 92

How much chemicals do pulpers consume? New 33-plant study gives definitive answer . . p. 106

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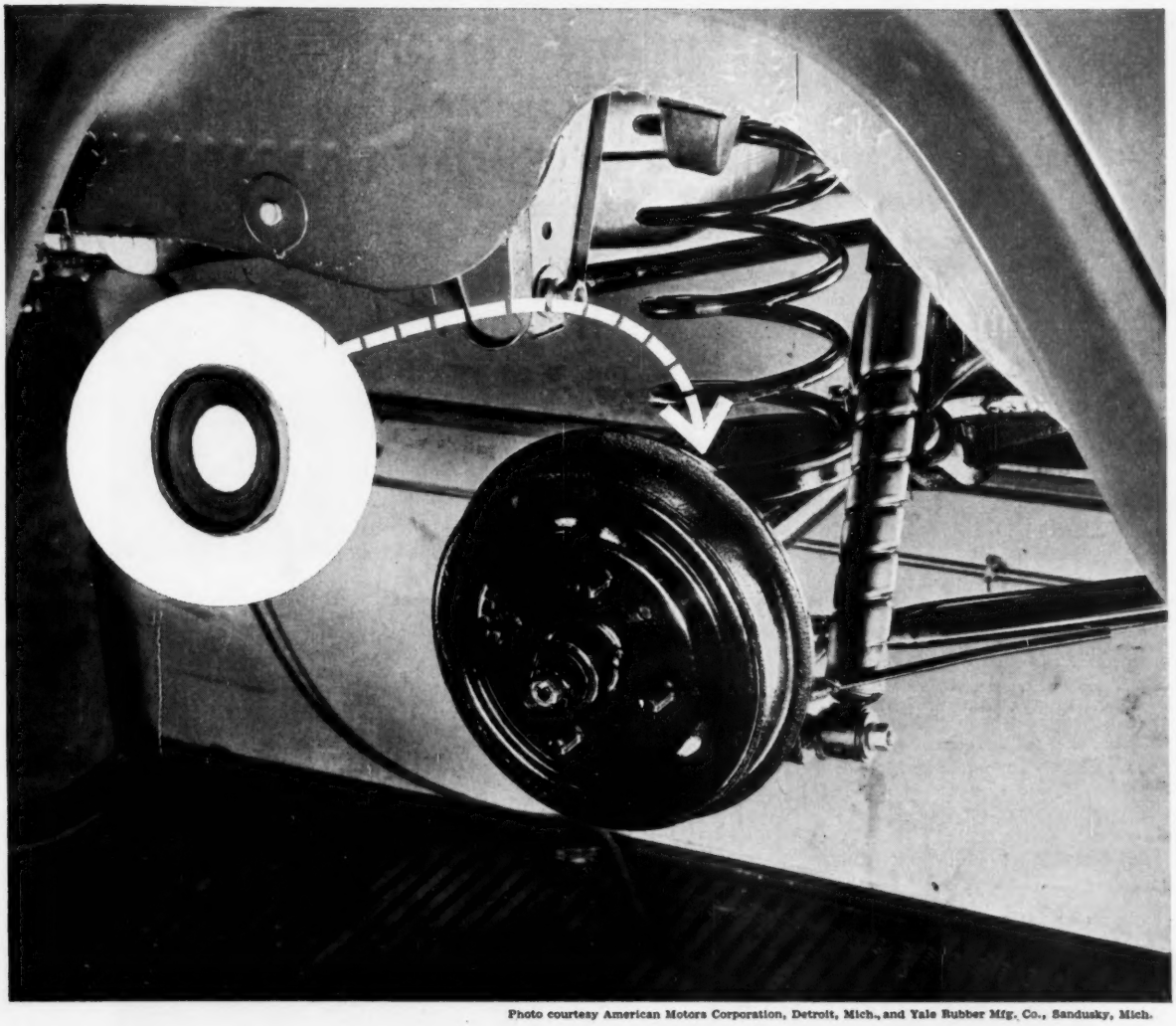

Photo courtesy American Motors Corporation, Detroit, Mich., and Yale Rubber Mfg. Co., Sandusky, Mich.

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If you're interested in making oil seals that will sell, then take two tips from the manufacturer whose product is pictured above. First, develop the simplest design that will do the job. And second, use a compound based on CHEMIGUM nitrile rubber.

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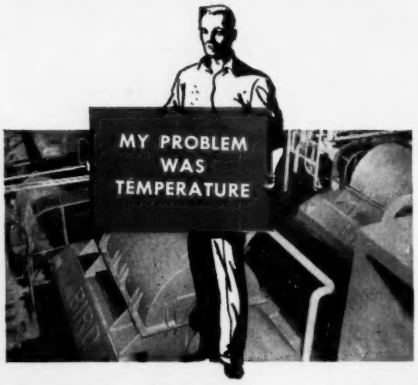
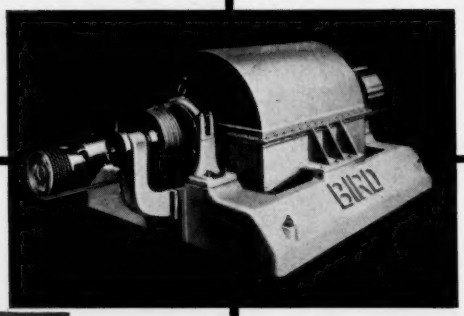
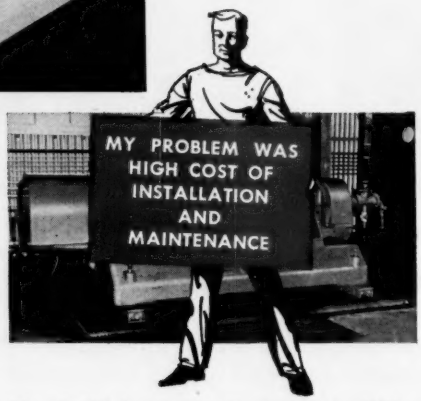


The BIRD handles hot slurries without flashing, blinding of filter media or any need of "back washing." Feeds can be minus 100° F or plus 300° F. Both solids and effluent remain within a few degrees of input temperature.



The BIRD is a self-contained, automatic unit that usually runs for months without attention beyond routine lubrication. It requires no pre-thickening apparatus, no storage tanks, no vacuum, no filter media, no complex controls.



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Chemical Week

TOP OF THE WEEK

April 27, 1957

- **Now it's just plain Union Carbide Corp.,** as second-largest chemical maker's stockholders vote name change ..p. 37
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- **Allied Chemical teams up** with Orangeburg Mfg. in novel pipe-making venture .....p. 38
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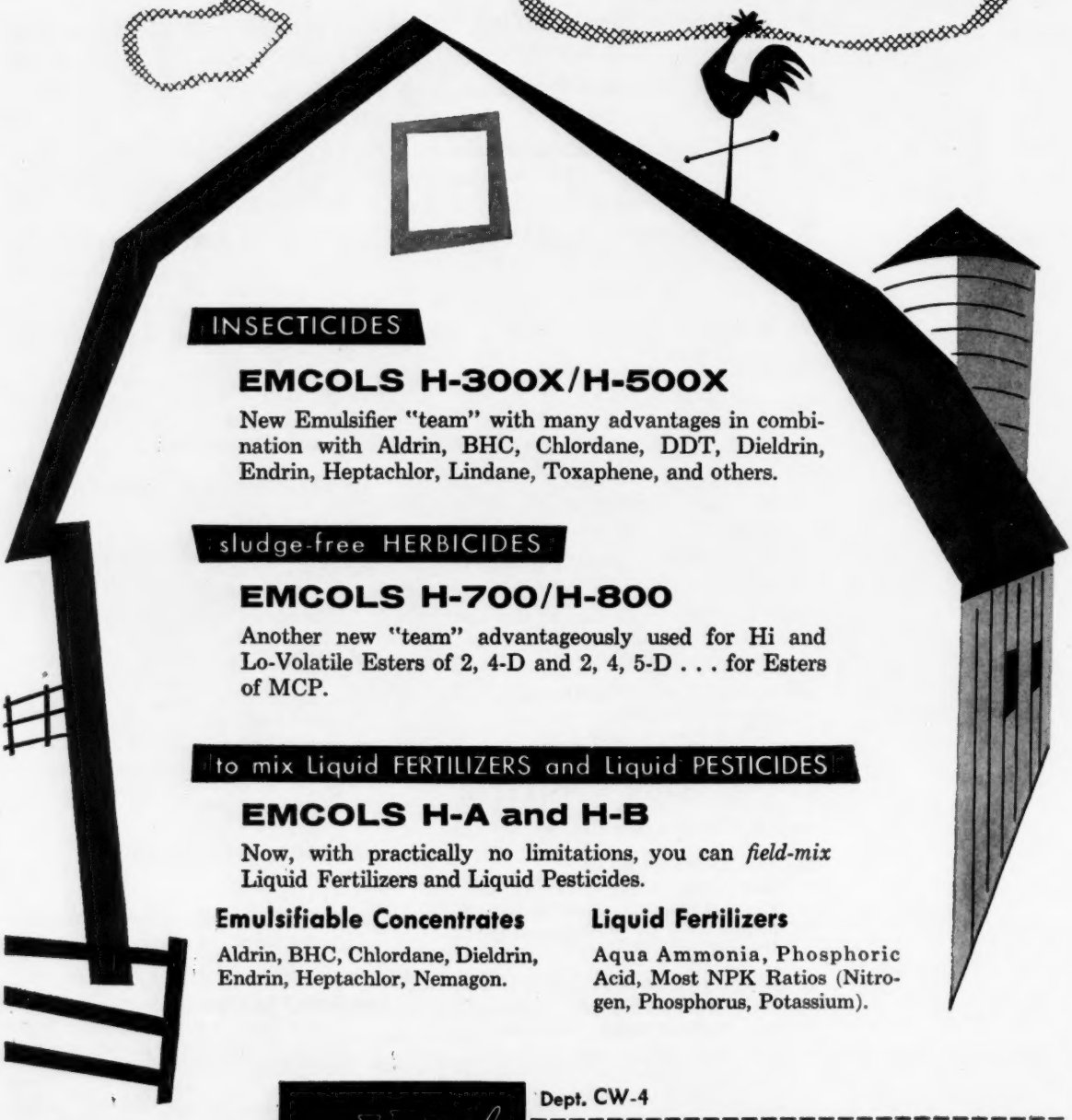

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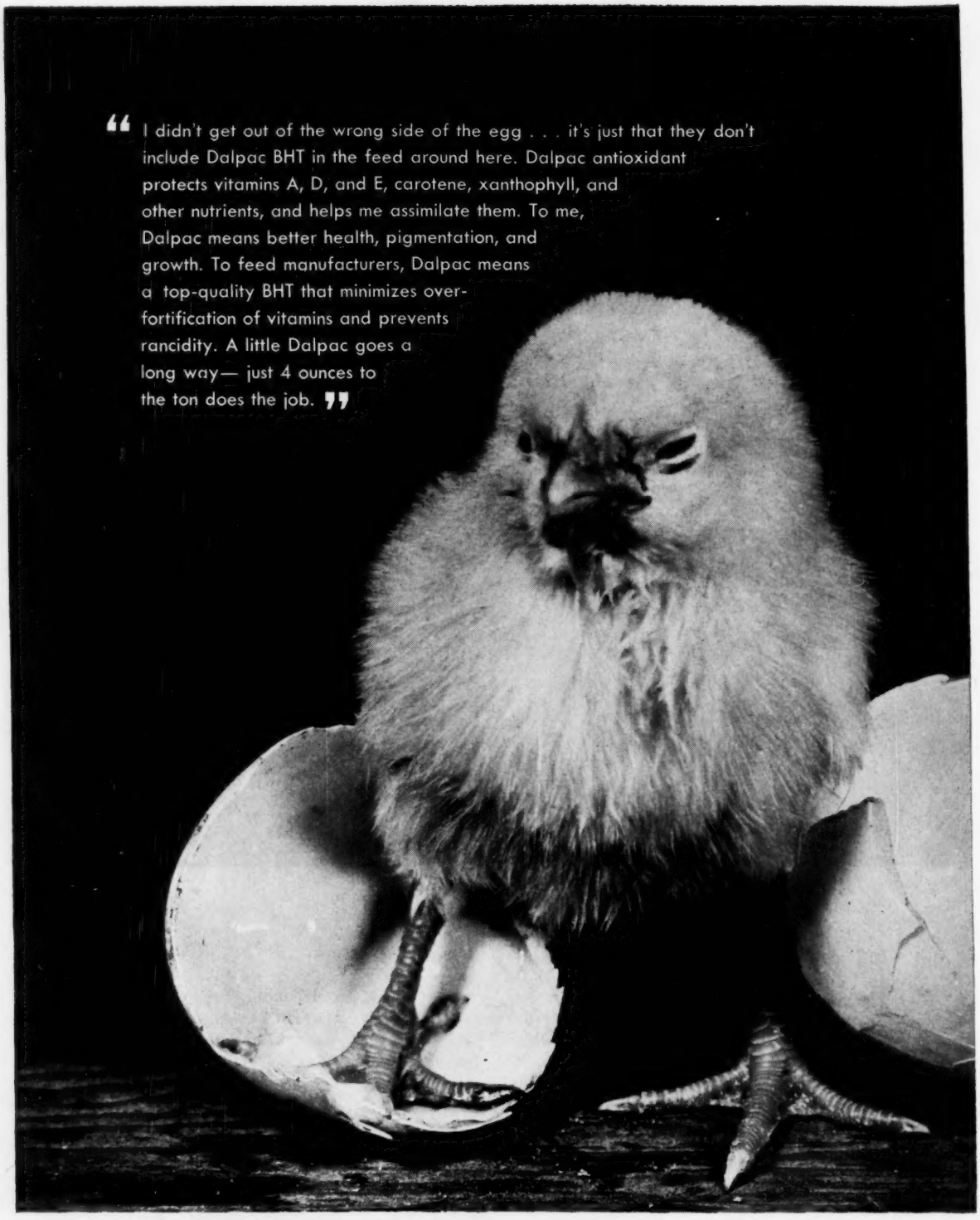
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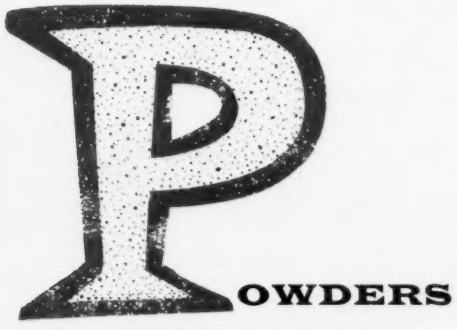

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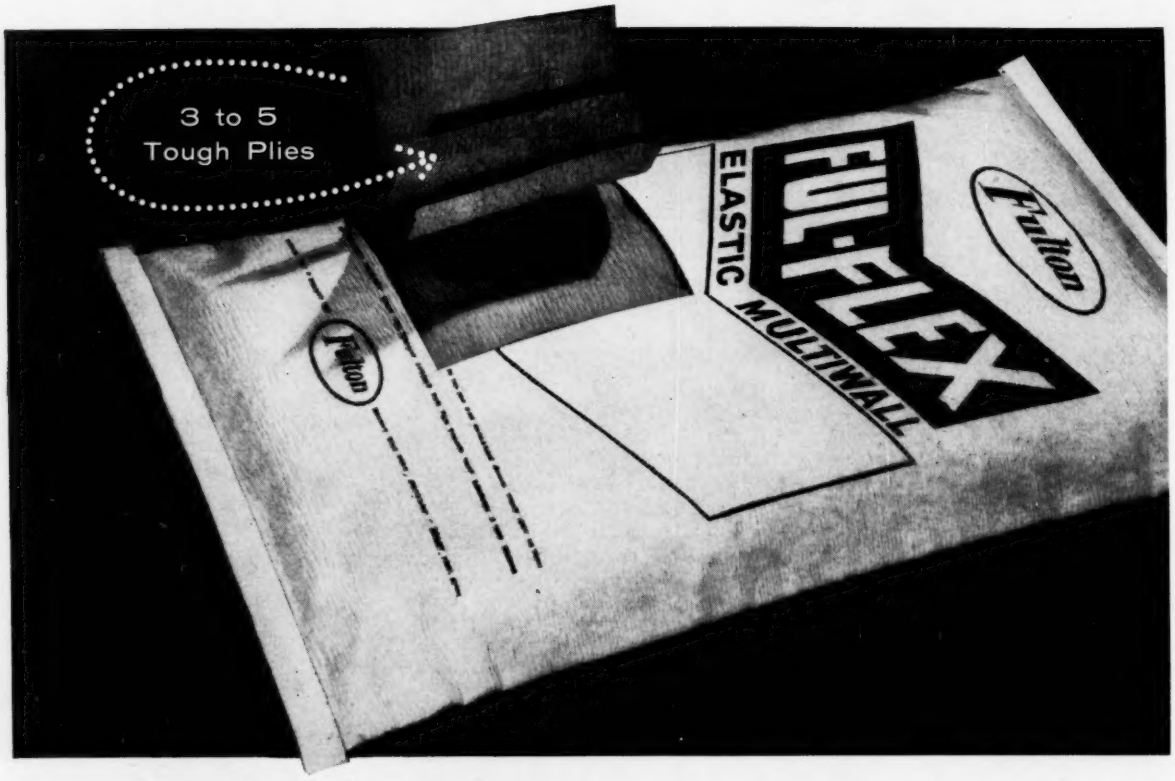

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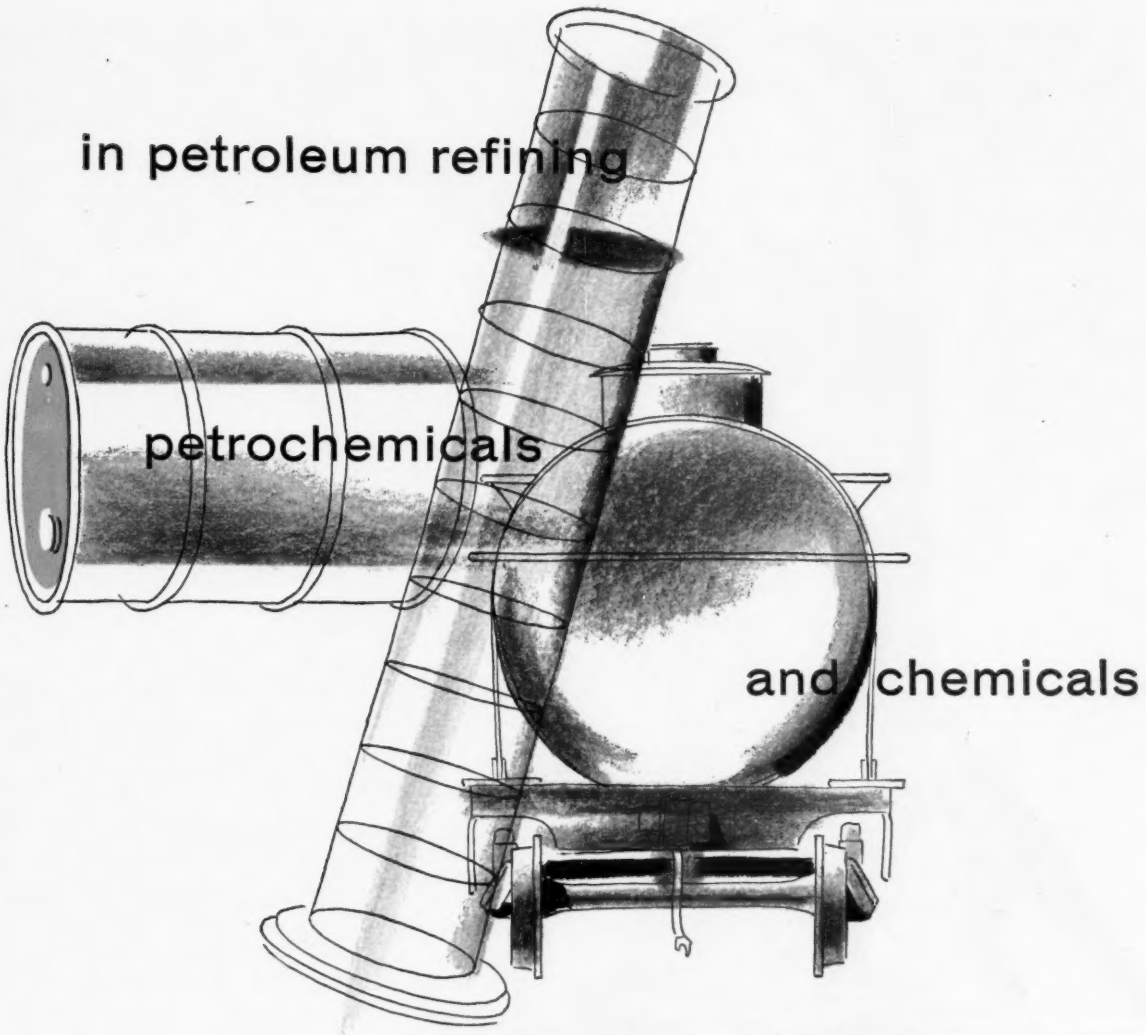

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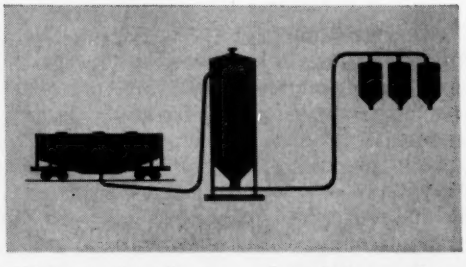

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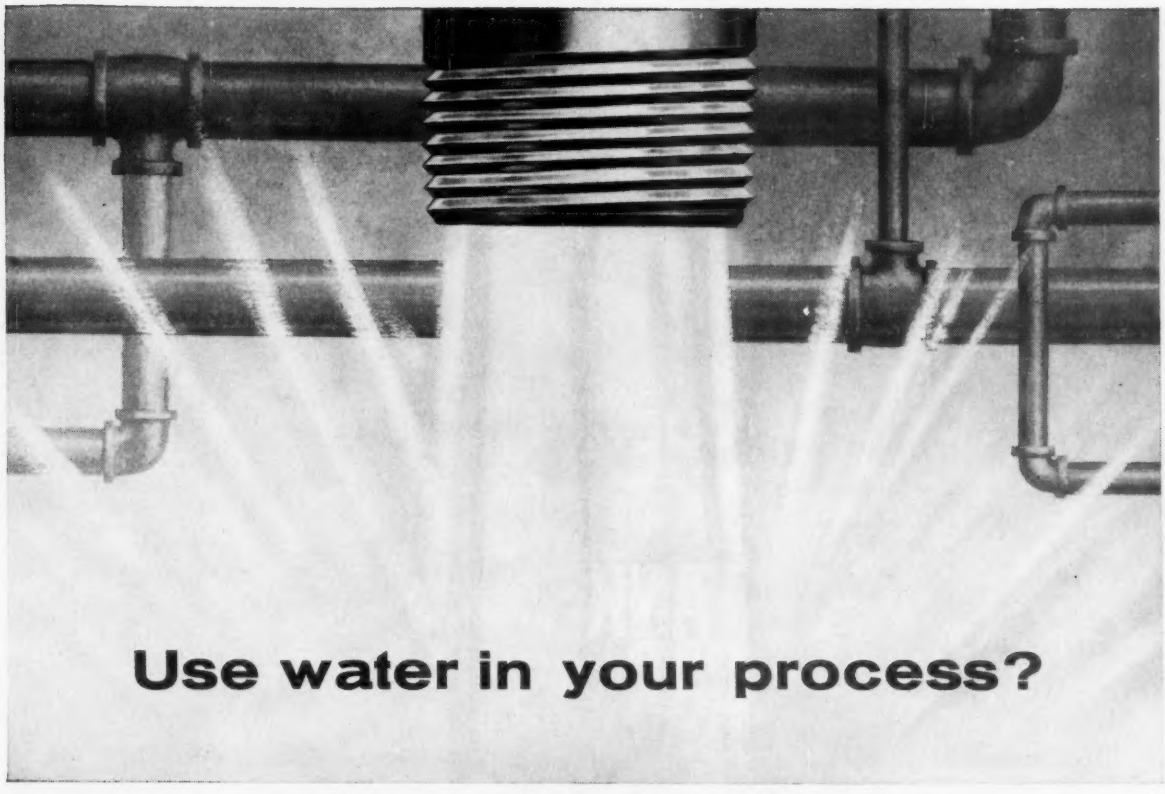

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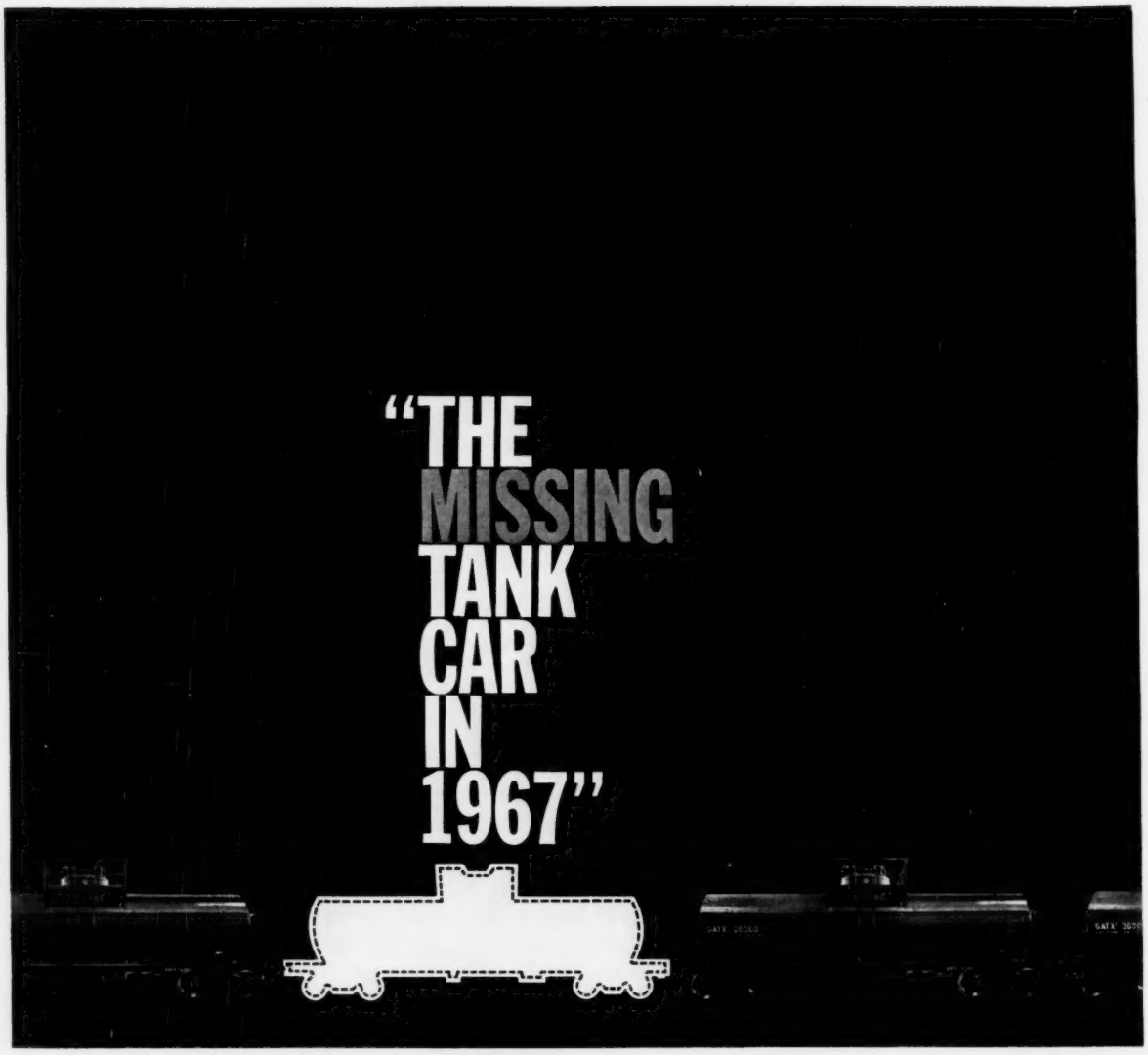

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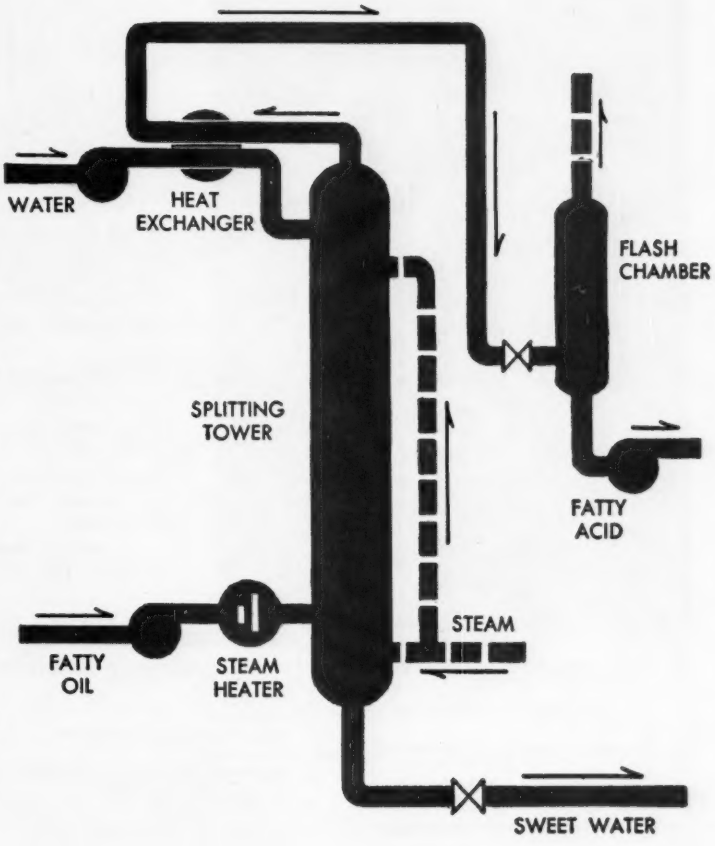

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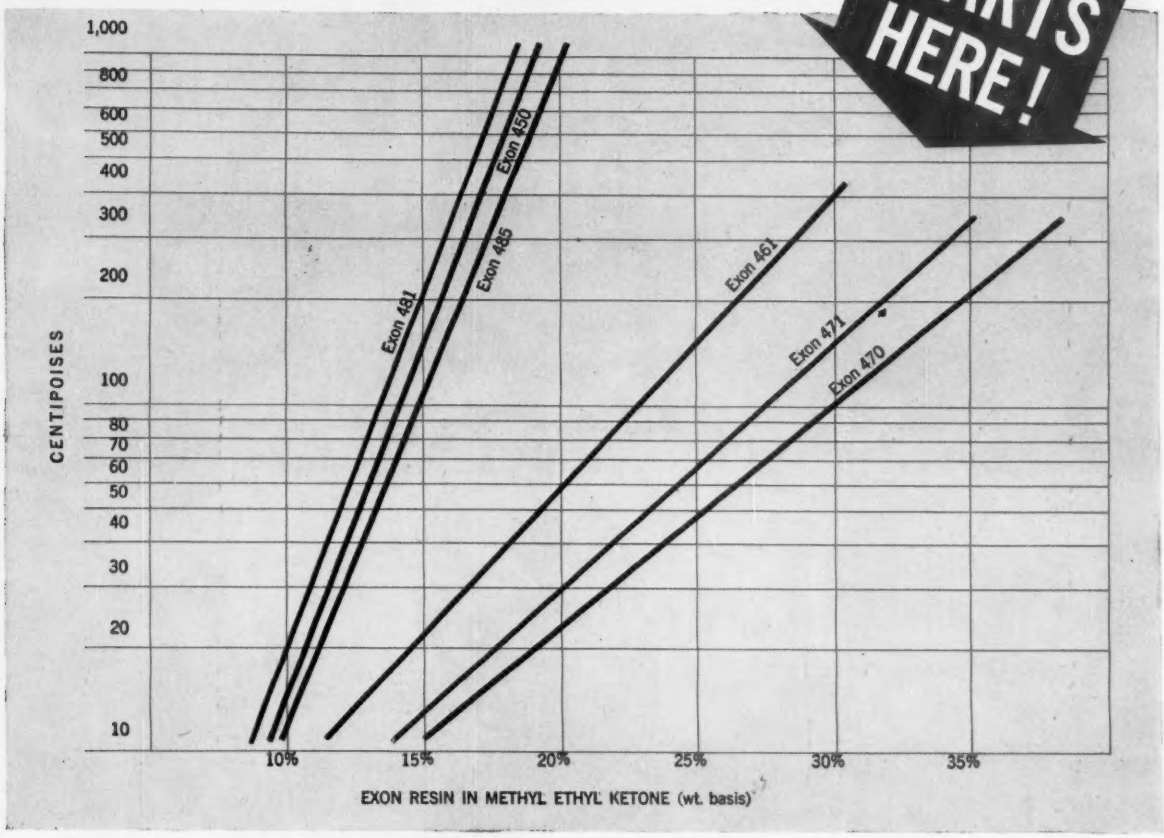

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EXON 470 Excellent adhesion to metals, alkyd and vinyl surfaces. Compatible with wide range of drying oils, alkyds, phenolics, melamines. High solubility in inexpensive solvents.

EXON 471 Excellent for weatherability and durability in a protective coating. Corrosion resistant. No measurable change after sunlamp exposure for 360 hours as 1 mil film.

EXON 481 Makes possible colorful, abrasion-proof, washable coatings that resist fading or cracking.

EXON 485 For superior strip coatings. Lower viscosity makes application easier and shelf-life better. Good clarity.

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We suggest you keep this chart handy—to help you put your finger on the right resin for *you* — at a glance.

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CHEMICAL PROGRESS WEEK-APRIL 8-12

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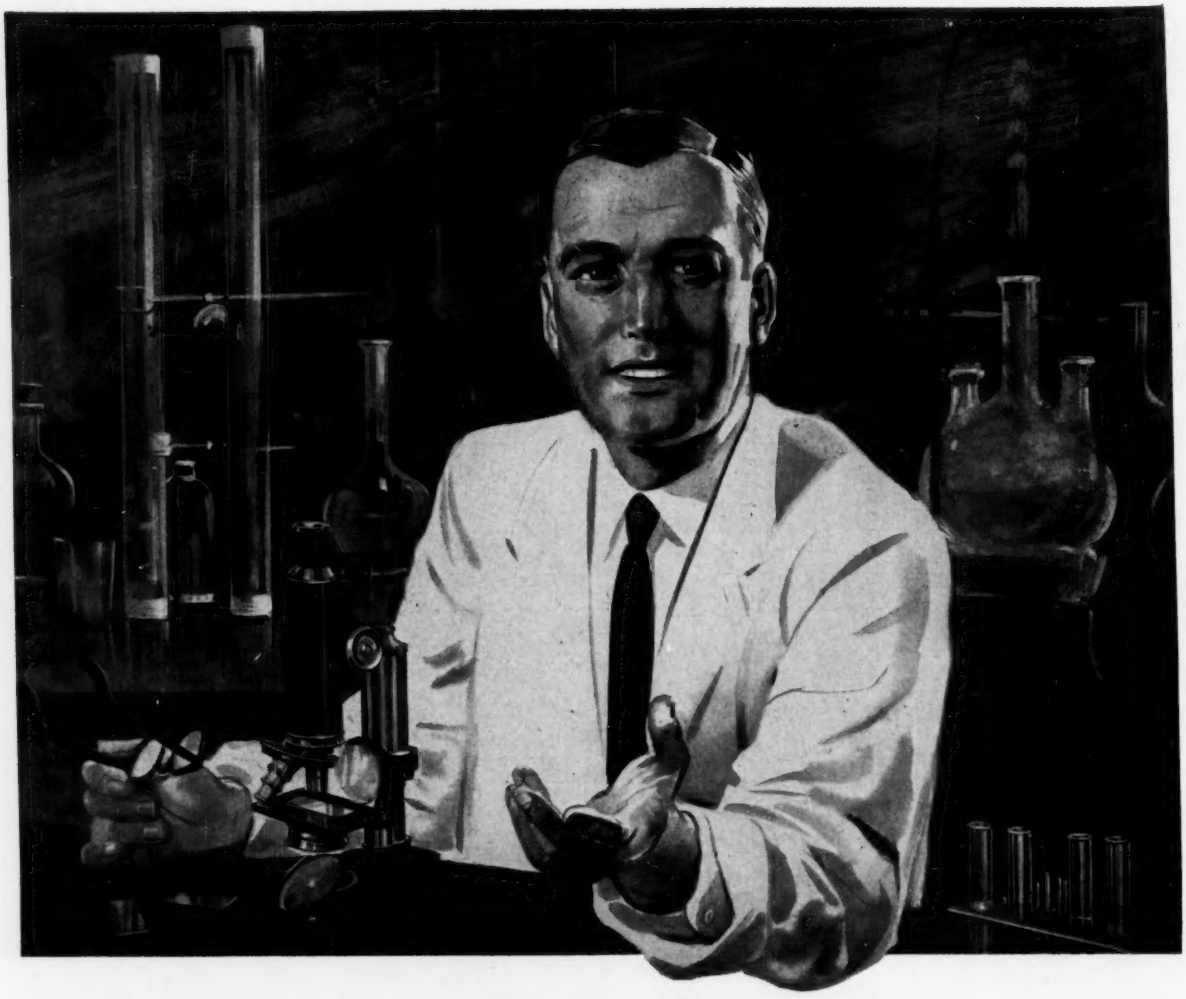

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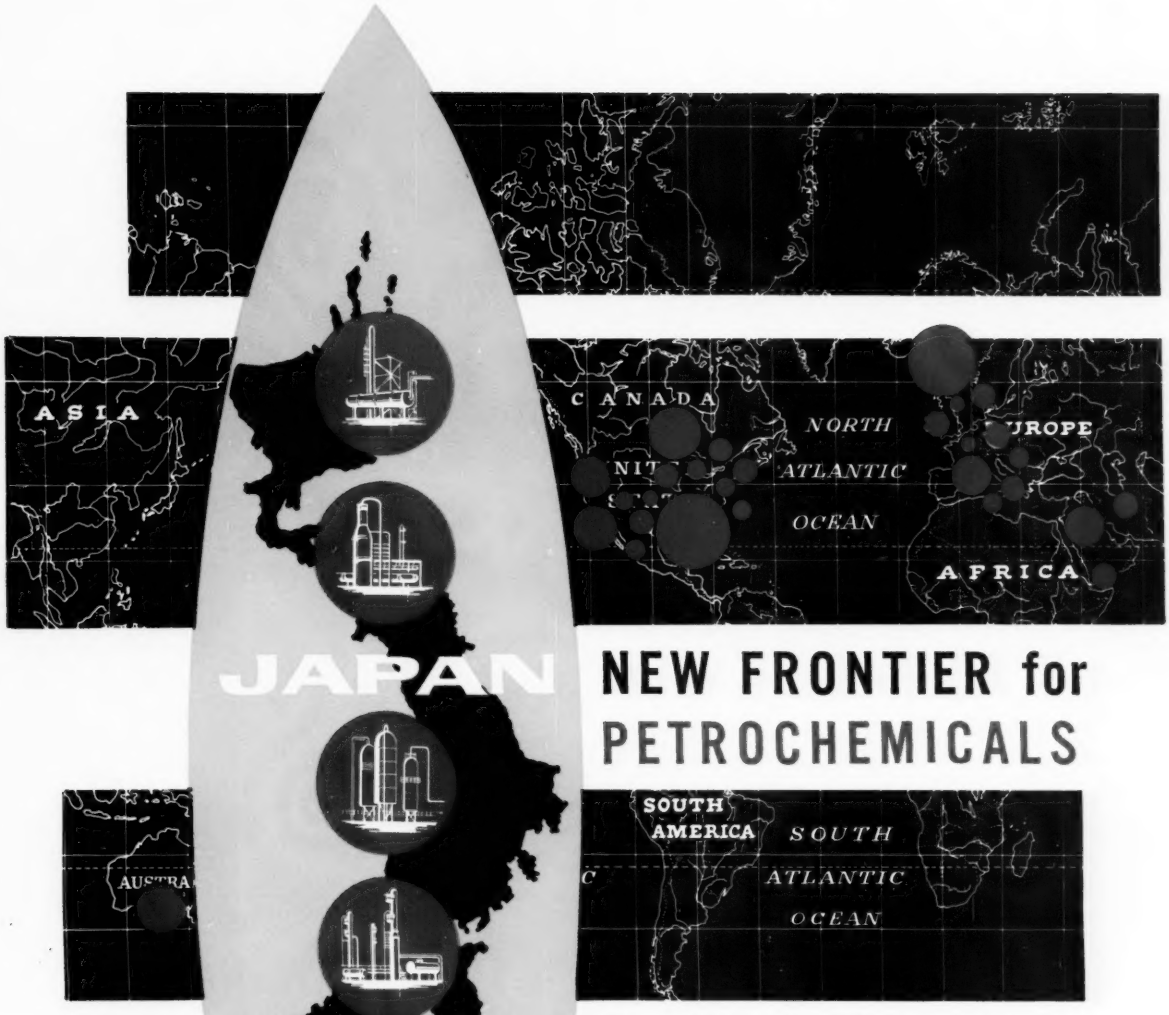

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Union's 5-Star Multiwall Plan has helped many companies get more for their Multiwall dollar. See how this simple proposal operates, how it can help you. We'll be glad to send details.

Better Multiwall performance through better planning

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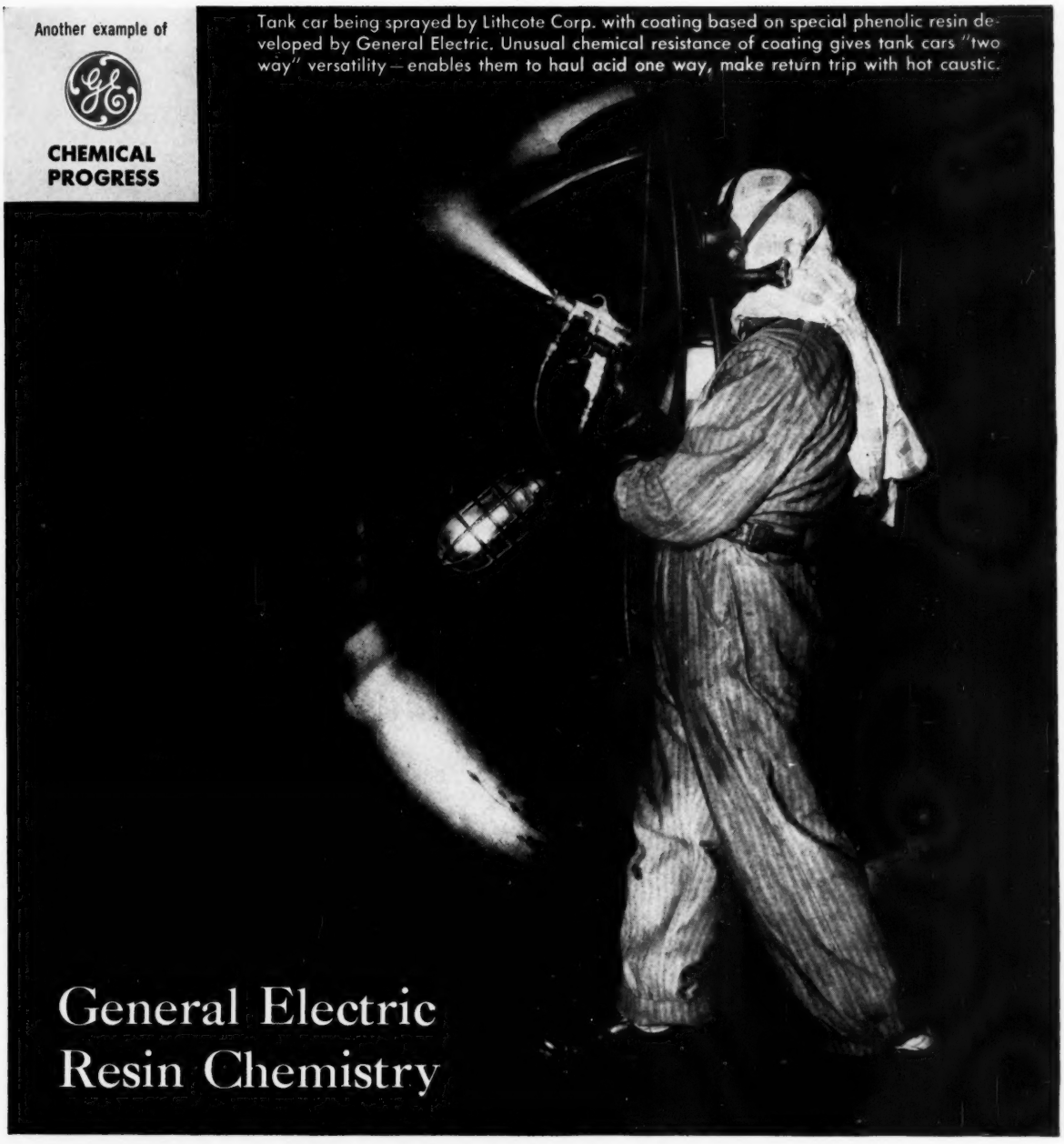
Tank car being sprayed by Lithcote Corp. with coating based on special phenolic resin developed by General Electric. Unusual chemical resistance of coating gives tank cars "two way" versatility—enables them to haul acid one way, make return trip with hot caustic.



General Electric
Resin Chemistry

GIVES TANK CARS A "TWO WAY STRETCH"

Corrosion that never touches a chemical tank car can still severely limit its usefulness—in this way: A car delivering acid may have to stand idle or be returned empty if its protective lining isn't impervious to attack by other corrosive chemicals.

To solve the problem of chemical corrosion—for processing equipment as well as tank cars—General Electric chemical research has developed a class of coating materials called G-E Methylon® Resins. These resins have all the chemical resistance of phenolics, plus unusual resistance to alkalies, soap solutions and strong oxidizing agents such as chromic acid. Under severe operating conditions, G-E Methylon formulations have far outlasted standard coating materials.

Resin chemistry is an important part of General Electric research, for G.E. makes a wide range of resins for industry. For further information on Methylon resins, write Dept. CMD, CHEMICAL and METALLURGICAL DIVISION, General Electric Company, Pittsfield, Mass.

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The Shell Chemical "Quality Group" of active solvents includes Acetone, MEK, MIBK, EAK, and DAA as well as latent solvents MIBC, IPA and Industrial Ethyl Alcohols. Your Shell Chemical technical representative will gladly discuss with you the advantages of ketone solvents in your own lacquer formulations.

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SHELL

Business
Newsletter

CHEMICAL WEEK
April 27, 1957

American Cyanamid's try at multiunion, multiplant negotiation of fringe benefits is near conclusion. It has reached tentative agreement with a two-union team, representing workers at 20 plants, to raise pension and insurance benefits. Details of the agreement haven't yet been released, pending ratification by the company's board of directors and the membership (production and maintenance workers) of the local unions.

First big chemical company to try such a broad negotiation plan was Monsanto, which worked out a revised pension and insurance program with a three-union committee representing hourly paid employees at 14 of the firm's plants in the U.S. *(CW, Jan. 28, '56, p. 22).*

Two other industry leaders have also acted recently to increase their employees' pension and insurance benefits. Union Carbide's stockholders last week approved a liberalized retirement program (*see p. 37*); Du Pont put an expanded insurance plan into effect Jan. 1.

•

Union Oil Co. is considering merging its two chemical subsidiaries, Brea Chemicals and R. T. Collier. Brea is wholly owned by Union; Collier, activated carbon producer in California, is only 60% owned by Union, though the oil firm is negotiating to acquire the remaining 40% interest.

Economy is Union's aim in working toward the merger. In re-evaluating the direction its chemical activities will take, it appears to be seeking closer correlation of chemical and refining operations.

Union's decision to halt construction of its polyethylene unit, which it had begun with Koppers, doesn't rule out either of the former partners' going ahead with plans to make the plastic. Union reportedly decided to delay its entry because of the limited West Coast market, plus no desire to compete for the rapidly crowding national market.

•

There's an encouraging note in late labor news.

A strike is over at Columbia-Southern's Lake Charles, La., plant. Members of the Machinists union signed a contract that runs until Aug. '59, provides an 8% wage boost, with a 3% hike in July '58.

Goodrich-Gulf workers may be back on the job this week at the firm's Port Neches, Tex., plant. It had been closed by the strikes at Goodrich's tire factories, major consumer of the Goodrich-Gulf synthetic rubber output. G-G was not able to resume operation immediately.

Operation is heading back toward normal at two of three struck oxygen plants of Linde Air Products Co. Although no new agreements have

been settled on, workers are now back in considerable force at the firm's plants in Kittanning, Pa., and Youngstown, O., and will work pending contract settlement. At Essington, Pa., supervisory personnel are still operating the plant, although wage negotiations are continuing.

•

Lever Brothers will go into Liquid Lux detergent manufacture at its Baltimore plant soon. Heavy sales of the liquids (Liquid Lux and Wisk) have required an expansion of production; the present contract suppliers of the Liquid Lux—Stepan (Chicago) and Fluid Chemical (Newark, N. J.)—will continue their manufacturing and packaging operations for Lever.

•

Competitive nuclear power is at least 10 years away, predicts Congressman Melvin Price (D., Ill.), chairman of the Research and Development Subcommittee of the Joint Committee on Atomic Energy. Price's forecast came after a visit to AEC's Bettis plant in Pittsburgh (*see also p. 88*). He reiterated his recommendation that Bettis should next undertake development of a gas-cooled natural uranium reactor of the kind the British have adopted.

•

Monsanto has earmarked $124 million for expansion in '57, President Charles Thomas told security analysts in New York this week. The firm has set aside some $82 million for its own domestic expansion. One of the main projects is enlargment of polyethylene capacity in Texas to 75 million lbs./year, an expansion scheduled for completion by mid-'58. Jointly owned U. S. companies will get $32 million from Monsanto, foreign operations will get another $10 million. All expansion money will be raised internally—no new stock will be marketed.

Thomas also told the analysts that Monsanto's acrylonitrile and its jointly owned methanol operations in Texas City, Tex., are now profitable. And it is readying for market a new form of stabilized ammonium nitrate.

•

Oroville, Calif., won't have a fluoridated water supply until the California supreme court has a chance to rule on the constitutionality of an order by the California Public Utilities Commission directing the town's private producer of water to add fluorides (*CW Business Newsletter, Feb. 23*). The commission issued a stay of its order after an antifluoridation group petitioned that state's high court to kill the CPUC ruling. Claim of the group: CPUC has no authority to determine questions involving public health.

But those favoring fluoridation got a boost this week with the publication by Oxford University Press of "The Fight for Fluoridation." Author Donald R. McNeil, associate director of the Wisconsin State Historical Assn., has produced a thoroughly documented history of fluoridation. But he points out that he has only brought the story up to date; some of the most important chapters have yet to be written.

BRIEFS for buyers of

Sodium Sulfide
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Sulfide economics: A different molecule might save you money

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   $(60 \times \frac{32}{78} = 24.6$ lbs. of sulfur)

   But in 100 lbs. of flake NaSH there are about 70 lbs. of anhydrous NaSH.

   $(70 \times \frac{32}{56} = 40$ lbs. of sulfur)

2. Therefore the sulfur in sodium sulfhydrate costs less than the sulfur in sodium sulfide. Sulfur in Na_2S (at prevailing prices) costs about $.224 a pound.

   Sulfur in NaSH costs about $.169 a pound.

3. And because Hooker sodium sulfhydrate contains less water of crystallization, it costs less in freight charges.

Your Hooker salesman will be glad to review these figures with your specific requirements in mind. A talk with him might achieve lower-cost sulfidity in your processing.

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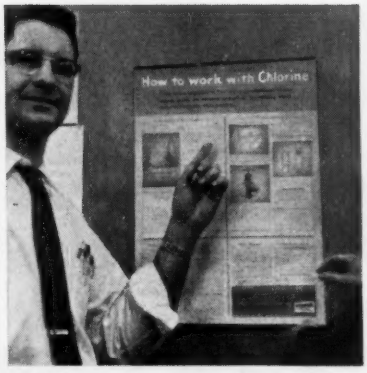

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It tells some of the things to do and, equally important, some of the things *not* to do with chlorine.

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For more information on items mentioned here, check below:

- ☐ Sodium Sulfhydrate
- ☐ Sodium Sulfide
- ☐ Chlorine Safety Chart
- ☐ Caustic Soda
- ☐ Caustic Potash

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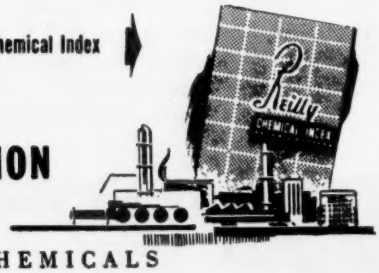

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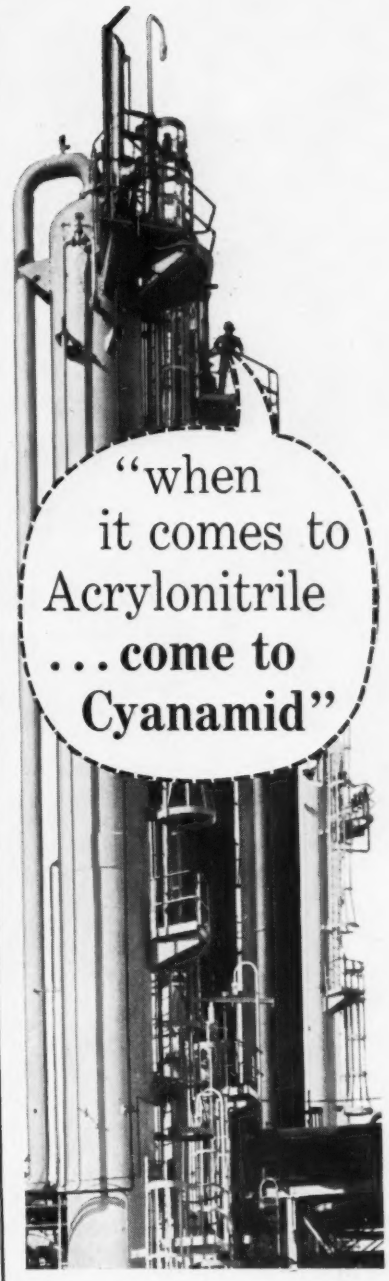

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BEHIND THE NEWS

WINNER WINTON: His review of textile chemical situation brings . . .

Recognition for a Good Job

Last Wednesday, *CW* Sales & Distribution Editor John Winton took a train to Washington, came back to New York with a prize. Secure in his suitcase was a Jesse H. Neal Award of Merit "to an individual editor for the best account of an event, project, or subject (news reporting and/or articles) or major significance to the field served."

The Neal Awards (named after ABP's early managing director) were established three years ago by the Associated Business Publications to recognize outstanding editorial performances in the business press and to encourage improvement in the quality of business news reporting. CHEMICAL WEEK submitted its first entry this year, Winton's story, "Kickbacks are Hurting Textile Chemicals" (*Aug. 4, '56, p. 60*)—and won its first Neal Award.

The piece started with a telephone call to a dyestuffs sales vice-president on an entirely different subject. During the course of the conversation, he wryly referred to some of the unsavory practices among some textile mills. John scented a story. He called high officials in several other companies. From some he got "no comment"; from others he got an earful. Not that the situation was anything new—it was news, though, that "kickback" practices were still very much alive and costly to industry after many years' effort to stamp them out.

Magazines in the textile field picked up the article. One wrote an editorial; another queried its own subscribers and found confirmation of the *CW* piece. There's no doubt that the article kicked up a furor—with beneficial results, we hope, to the textile chemicals industry.

Still in his late '20s, Winton is in many ways typical of *CW* editors. At high school on Staten Island, he wrote for the school paper and was photo editor of the yearbook. He took his B. S. in chemistry at Brooklyn Polytech and thereafter worked on development at Sterling Winthrop Research Institute's pilot plant in Rensselaer, N. Y.

But his research work didn't immunize him sufficiently against printer's ink. His eye was caught by a *CW* "Editor Wanted" ad in the New York Times, he applied for an interview, got the job, and last week publicly proved a fact that we've known for some time—he deserved his opportunity. We're all proud of his achievement.

Howard C. E. Johnson
Editor

OPINION

Add 'Exact compo-'

TO THE EDITOR: In your article (*April 6*) on xylenes, a portion of the text appears to be omitted between pages 33 and 34.

ALBERT E. MYERS
Special Products Division
Industrial Products Dept.
Shell Oil Co.
New York

Reader Myers was first among many to ask for the missing words. In making up the pages, 1½ words, "Exact compo-," were lost from the bottom of p. 33.—ED.

Room for More?

TO THE EDITOR: . . . Your article ["40 Trade Associations: Room for More?" *(March 23)*] brings up the question of additional trade associations. . . . We have entered into many trade associations in the past and, as a matter of fact, just recently joined with other cellulose producers in a new trade association. Obviously, there are advantages in joining in a group, especially when the specific profits envisioned do not warrant a major expenditure by any one company.

We have been following with interest the development of the lithium industry, and we believe that such a trade association in this field can be of real value.

J. H. WORTH
Director of Technical & Economic Evaluation Dept., Chemical Division
Celanese Corp. of America
New York

TO THE EDITOR: Your article "40 Trade Associations: Room for More?" (*March 23*) seems to invite the comment, "Divided we fall."

I can understand that there are cogent arguments in favor of diversification and the need for more and more specialization, but these are often carried to extremes. In fact, specialization, as all those who have studied biological evolution know, leads eventually to extinction.

On the contrary, I would argue for consolidation of the 40-odd chemical trade associations into a mere handful for the following major reasons:

HF

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anhydrous and aqueous

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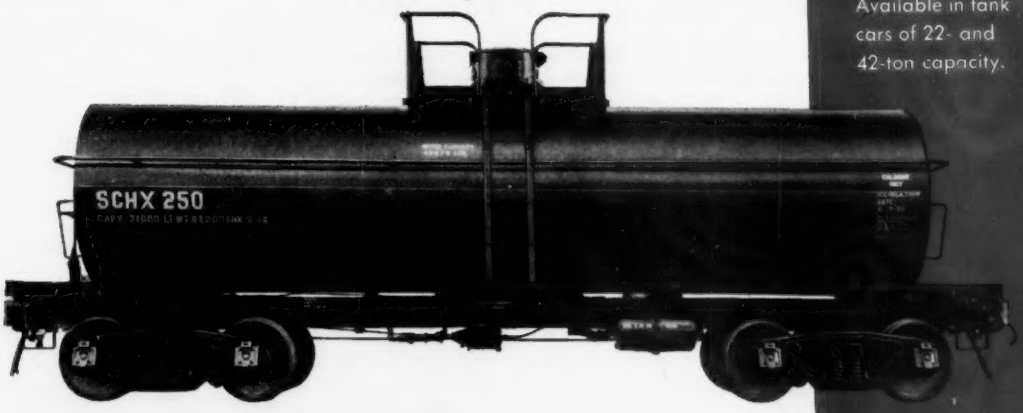
IN QUANTITY AND QUALITY



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City_____ State_____

OPINION

(1) It costs more and more to operate associations, fees have to increase, and some memberships are lost. . . . Furthermore, a great number of companies perforce have to join several associations, which becomes very costly in time and money.

(2) In matters of legislation and the like, union is strength and could speak for the industry as a whole with a much stronger voice than we can at present. We have no equivalent, lobbywise, of AMA or the unions, for example.

(3) In the present setup, there are a great many areas where overlapping occurs, which gives rise to much waste of time and emotional crises. In a merger of associations, a much more efficient distribution of effort could be attained.

(4) To this end, it may be possible to reduce the 40-odd associations to a quarter of that number by merger. These some 9 or 10 differentiated trade associations would federate as semiautonomous units into a general Chemical Industry Council.

The makeup of the 10 fundamental units could be associations of:

(1) Basic inorganic chemical manufacturers.

(2) Processors of organic raw materials.

(3) Petrochemical and organic chemical manufacturers.

(4) Chemical specialties manufacturers.

(5) Agricultural chemical manufacturers.

(6) Drugs and remedy manufacturers.

(7) Food chemical and cosmetic manufacturers.

(8) Manufacturers of essences, flavors and perfumes.

(9) Atomic and nucleonic chemical manufacturers.

(10) Soap and detergent manufacturers.

In turn, these basic units need not

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to: H. C. E. Johnson, Chemical Week, 330 W. 42nd St., New York 36, N.Y.

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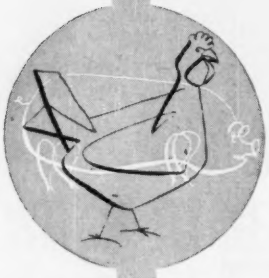

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KOPPERS

KOPPERS
COAL CHEMICALS

OPINION

be unitary, but divided into various divisions, again taking function into account.

Of course, this grouping is intended for the manufacturing end of the industry and would not entail any straying into the professional or distributive fields.

W. S. JESSOP
President
U.S. Sanitary Specialties Corp.
Chicago

Causes No Wear

TO THE EDITOR: . . . Your article *(March 23)*, "Newest Target: Clothes," . . . is informative and we enjoyed it.

One sentence intimates that repeated dry cleanings will wear out clothes. We find that this impression is greatly magnified out of all proportion to its importance.

In a recent wear study, we subjected both men's and women's suits to repeated wear and dry cleanings. After 50 dry cleanings there was practically no difference in appearance of the new suit and their dry-cleaned counterparts. (Fifty dry cleanings is many more dry cleanings than the average suit ever gets in a lifetime of wear.) Much of the wear attributed by the consumer to repeated dry cleaning is actually wear during use.

In short, dry cleaning prolongs the useful life of . . . clothes and it is a sensible proposition to get your clothes dry-cleaned when they are dirty. . . .

JOSEPH R. WIEBUSH
Director of Research
National Institute of Drycleaning
Silver Spring, Md.

Dry cleaning itself may not wear out clothes, we agree. But experts have told us that preliminary "spotting" (which involves rubbing the cloth) and subsequent ironing do contribute to wear.—ED.

Change in Indexes

TO THE EDITOR: Here in the Bond Department at John Hancock, we follow very closely the Stock Price Index of 11 Chemical Companies (Standard & Poor's Corp.) [that appears each week in *Charting Business*]. In the March 9, 1957, issue, under "Latest Week", the index was 402.8, yet the March 16, 1957, index has been adjusted to 41.89 for the Latest Week.

It would be most appreciated if

Keeping the business end of a hull in business!

Every craft, from a roaring speedboat to the lazy family canoe, is only as seaworthy as the thin "skin" of finish that shields it. And this vital "skin" has to be tough to provide active protection from water, wind, weather!

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Olefins are used in production of quality resins for heavy-duty varnishes. They offer faster drying, increased durability against wear and erosion. Typical applications of resins include industrial flooring, bowling alleys, boats. Olefins are also being used profitably in the manufacture of rubber chemicals, germicides, insecticides, dyes and surface active agents.

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For full information, write or wire The Atlantic Refining Company, Dept. H-4, at the nearest office listed.

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Atlantic Refining Company of Brazil, Rio de Janeiro

ATLANTIC
PETROLEUM
CHEMICALS

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OPINION

you would explain to me the reason and adjustment factor used in computing this new index.

PAUL F. CUDDY
Bond Department
John Hancock Mutual Life
Insurance Co.
Boston, Mass.

Standard & Poor's Corp., in adapting its various stock indexes to electronic computation, has revised the base period for its chemical index. The old index adjusted the 1935-1939 prices of 11 chemical stocks so as to equal an index figure of 100. The base years for the new index are 1941-1943. Average of stock prices in these years were set equal to 10. Thus, previous Standard & Poor's indexes can now be converted to the new basis by multiplying them by .098538.

An up-to-date listing of all these indexes appears in the 1957 edition of Standard & Poor's Trade Statistical Security Price Records.—ED.

MEETINGS

Scientific Apparatus Makers Assn., 39th annual meeting, The Greenbrier, White Sulphur Springs, W.Va., April 27-May 2.

American Oil Chemists' Society, 48th annual meeting, Roosevelt Hotel, New Orleans, April 29-May 1.

American Material Handling Society, materials handling conference, Convention Hall, Philadelphia, April 29-May 3.

European Federation of Chemical Engineering, symposium on chemical reaction engineering, Amsterdam, May 7-9.

Electrochemical Society, 111th meeting, Hotel Statler, Washington, May 12-16.

U.S. Atomic Energy Commission, inter-American symposium on the peaceful applications of nuclear energy, Brookhaven National Laboratory, Upton, L. I., May 13-17.

New York State Society of Professional Engineers, engineering industries exposition, Statler Hotel, New York, May 16-18.

American Institute of Mining, Metallurgical and Petroleum Engineers; theme: Melting and Solidification; Hotel Statler, Boston, May 17-18.

Technical Assn. of the Pulp and Paper Industry, coating conference, Milwaukee, May 20-23.

Synthetic Organic Chemical Manufacturers Assn., outing, Skytop Lodge, Skytop, Pa., May 27-29.

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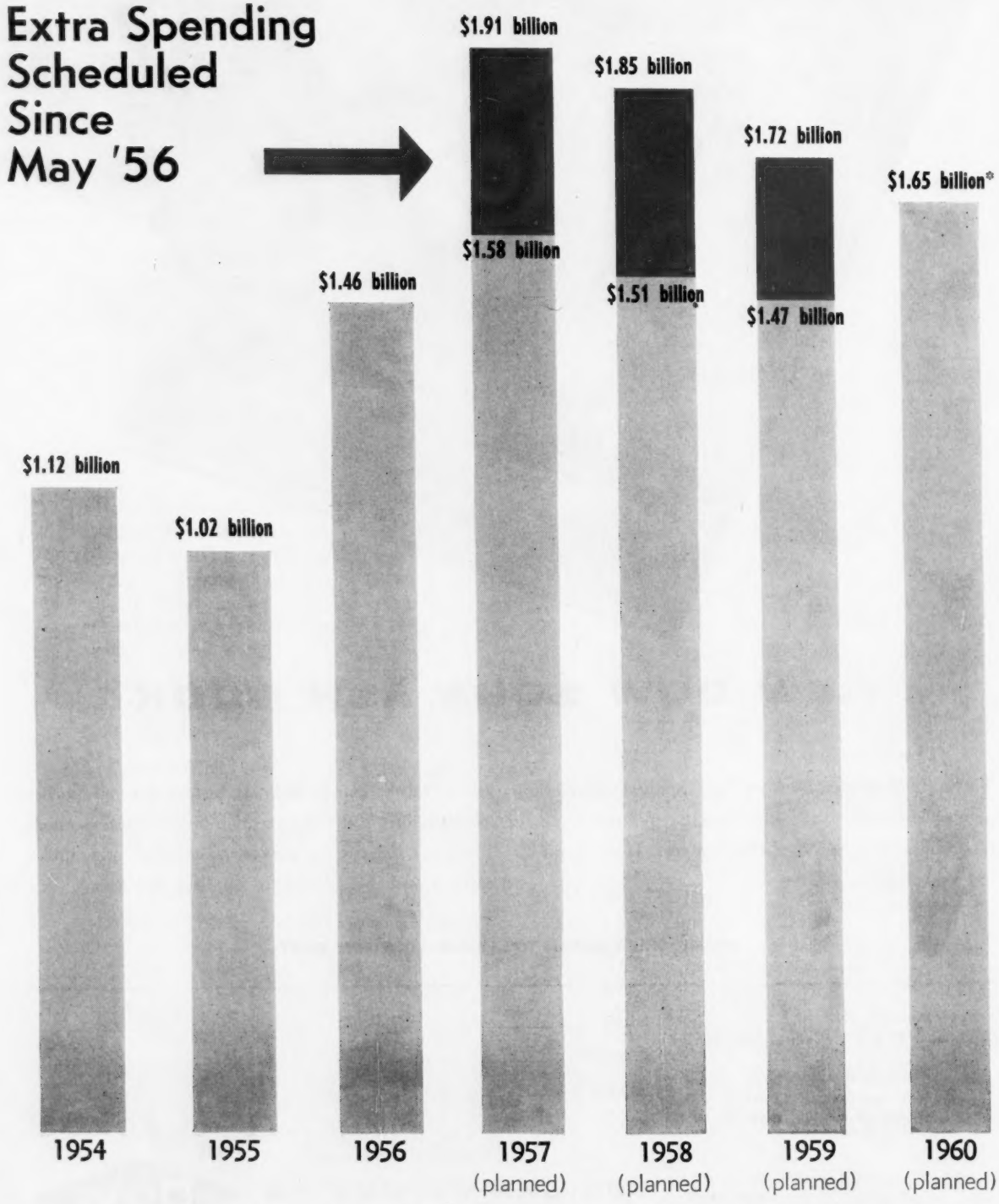
1957 Chemical Capital Spending Plans



Sources: McGraw-Hill Dept. of Economics; Commerce Dept.; SEC.

*1960 plans were not surveyed a year ago.

Show Greater Gains than All Industry

	1955	1956	1957 (million dollars)
Chemicals	$1,016	1,455	1,906, up 31%
Paper	518	801	985, up 23%
Rubber	150	201	217, up 8%
Cement, glass, clay	498	686	633, down 8%
Petroleum refining	704	711	924, up 30%
Nonferrous metals	293	601	998 up 66%
Textiles	366	465	399, down 14%
TOTAL–Process Industries	3,545	4,920	6,062, up 23%
TOTAL—Manufacturing	9,440	12,787	14,542, up 14%
TOTAL—All Business	30,030	36,641	40,979, up 12%

Chemicals Boost Spending by 31%

The chemical industry in 1957 will again take the leadership of various U. S. industry groupings in expanding plant and equipment. This year, chemical firms are planning to spend some $1.91 billion for capital additions, an increase of 31% over their collective spending in 1956.

These plans are revealed in the annual survey of business spending plans conducted by the McGraw-Hill Dept. of Economics and completed this week. In addition, planning for chemical process industries in general indicates a spending total of $6.062 billion, an increase of 23% over last year's figures.

Both estimates reflect increases well in excess of those proposed by manufacturing as a whole (up 14%) and all business (up 12%).

Extra Dollars: As shown in the bar chart (*left*), chemical industry capital expenditures planned now for '57 are some $330 million over forecasts recorded a year ago (*CW, May 9, '56. p. 16*), but agree with and extend the estimates received by McGraw-Hill in a later semiannual survey (*CW, Dec. 15, '56, p. 28*). They reflect, in addition to price inflation, continued optimism for the industry's growth.

Moreover, the survey indicates nearly equal optimism for future years with plans for '58, '59 and '60 showing totals of $1.85 billion, $1.72 billion and $1.65 billion, respectively—and all higher than the amount spent in any previous year. As they have in the past, these plans will no doubt be augmented as time goes on.

Standouts: Biggest percentage gain over last year's spending among process firms is recorded by nonferrous metals producers, who this year expect to spend $998 million, a gain of 66% over last year's $601 million. Next in rank are producers of chemicals, with petroleum refiners not far behind. The latter expect to spend $924 million, 30% more than the $711 million they spent in '56.

In terms of capacity, chemical industry output potential will go up to an index of 178 (1950=100), an increase of 9% over the previous year's index of 163. For process industries as a group, capacity will rise an average of 5.7% in 1957.

Breakdown: In the category of new construction and replacement-modernization, 1957 will see chemical firms putting 68% of their funds into new facilities. They'll replace and modernize old facilities with the other 32%. For process firms generally, 52% of funds will go toward expansion, 48% for replacement and modernization.

How Process Firms Will Divide Expenditures Between Expansion and Replacement-Modernization

	1957		1958-1960	
	Expansion	Replacement & Modernization	Expansion	Replacement & Modernization
Chemicals	68%	32%	64%	36%
Paper	53	47	54	46
Rubber	45	55	45	55
Cement, glass, clay	64	36	60	40
Petroleum refining	20	80	22	78
Nonferrous metals	90	10	72	28
Textiles	26	74	13	87
Process Industries	52	48	47	53
All Manufacturing	52	48	47	53

How Industry Hopes Its Sales Will Increase

(in physical volume)

	1956-57	1957-60
Chemicals	7%	25%
Paper	8	22
Rubber	5	14
Cement, glass, clay	4	19
Petroleum refining	6	13
Nonferrous metals	4	25
Textiles	2	14
Process Industries	5.1	17.4
All Manufacturing	6	19

Sales Hopes: Reflecting the current feelings of chemical management, predictions of physical sales volumes aren't as optimistic as they have been in the past, though they compare very favorably to those of other industries. Chemical firms expect to sell 7% more goods than in '56; process firms have an average expectation of 5.1% more sales than last year. In '56, these same firms were predicting increases in physical sales volume of 9% and 7%.

For research and development, chemical firms expect to spend $527.7 million this year, about $30 million more than last. Petroleum producers will set aside $225.3 million for such projects, about $20.5 million above the '56 total. Next-largest spender is the fabricated metal products and ordinance industry group, which will put up $173.5 million for research and development.

Growth of research and development expenditures is particularly significant, especially for all business. The over-all figure for funds spent in '56 is $6.1 billion, up sharply from the $4.8 billion spent in '55 and well above the estimates for '56. And plans indicate another 20% increase this year—to $7.3 billion.

New Products: The full measure of this increase in research spending obviously won't be felt for several years—it takes time to bring a research discovery to commercial production. But there is already an increase in the number of companies that are making significant capital expenditures to bring out new products. Half the firms in the chemical industry plan such investment in 1957; for manufacturing as a whole, the figure is 32% (it was 28% in '56).

The chemical industry capital spending surveys by McGraw-Hill, the Commerce Dept. and Securities & Exchange Commission, and Manufacturing Chemists' Assn., while all measuring the same general thing, are not exactly comparable.

McGraw-Hill and Commerce-SEC surveys are generally the same, though the later-to-appear government figures include reports from a larger number of smaller firms; too, metal and petroleum industry classifications are slightly different. MCA lists plant costs (in its own industry classifications) only for the year in which they are completed, surveys future plans for a two-year period.

CARBIDE'S BUNN†: He answers employees' questions on labor.

Labor Questions the Board

Among the many annual stockholders' meeting held last week Union Carbide and Carbon Corp.'s meeting* in New York held wide attention for a pair of reasons. Stockholders voted to remove the "and Carbon" from the firm's name, effective May 1. Employee-stockholders (striking and nonstriking) questioned management about its labor relations policies.

Some 2,000 stockholders and guests listened attentively while Carbide employee Anthony Wyschovski, a member of Niagara Falls OCAW Local 15-250, complained that Electromet management at Niagara Falls showed no desire to bargain over details of a new pension proposal, a contention that Executive Vice-President Howard Bunn denied. (Wyschovski later got up to thank UCC management for enhancing sickness and accident insurance benefits during 1956.)

Following closely on Wyschovski's words were those of Norman Krieger, 20-year employee of the striking Linde division's equipment-making plant at Tonawanda, N. Y., and 13-year president of OCAW Local 15-215. Krieger sought to show that UCC was stalling on negotiations in the Linde strike by not compromising with the union, causing loss of corporate income estimated at about $1.5 million so far.

Krieger said that in the 13-year history of his local, there had been no previous strike, but that in trying to negotiate with local plant management it has found members' requirements to be more than local management seems to be authorized to grant. He asked that stockholders direct the directors to negotiate a fair settlement so that stockholders can expect fair dividends. Bunn replied that local management is ready to negotiate whenever the union asks for a meeting.

Significance: Certainly Carbide's labor relations practices are not substantially different from those of most other large firms. But since more and more people—including many members of labor unions—are investing in common stocks, top management must now do more homework before the annual meeting of a company's stockholders.

No longer will financial policies and similar matters be the only subjects of stockholder queries. Top management's ideas on employee relations are undoubtedly about to become major discussion points at the annual meetings of almost every publicly held chemical firm.

†At right, Carbide's other executive vice-president, Kenneth Hannan.

*Some others: Rohm & Haas, Pfizer, Du Pont, Merck, U. S. Rubber, Owens-Illinois, Reynolds Metals, Borden, Alcoa, National Lead, Diamond Alkali, Pan-Am Sulphur, Vanadium Corp., Lehigh Portland Cement, National Distillers.

Struggle in Sulfur

Another battle for control of a chemical company apparently ended last week. At the annual meeting, members of the board of directors of Mexican Gulf Sulfur Co. were re-elected after being seriously challenged by a group of insurgent stockholders headed by Bernard Schatzman, former secretary of Mexican Gulf who resigned last year because of the company's "economic policy."

Final results of the voting gave 482,-614 shares to the management group and 351,622 for the opposition. All eight board members of the management slate were reinstated, although prior to the election both sides had claimed that they had a "substantial majority." Lack of cumulative voting prevented any of the dissenters from being elected.

Mexican Gulf has undergone a troublesome profit squeeze over the past few years, has blamed its poor earnings picture on an insufficient yield of sulfur from its only sulfur dome—located at San Cristobal, Mex. Company officials admit "original estimates of sulfur content at the San Cristobal mine were too high. Our property there is exhausted." Such conclusions are based on a report submitted by DeGolyer & MacNaughton, Inc., a large geological survey outfit.

Opponents: In direct opposition to this stand, the insurgents claimed that five other experts have reported up to 3 million tons of sulfur left at San Cristobal and that only the "correct technical operation" was needed to recover it.

But owners seem to support the present management, have voted upon a proposal to follow through on a mining agreement recently signed with Texas International Sulfur Co. that gives sulfur rights to Mexican Gulf on 27,000 acres in Nopalapa and that allows abandonment of the nearby San Cristobal operation.

The management slate received strong support from the U.S. Export-Import Bank, which had refused to lend Mexican Gulf any more money to finance operations at San Cristobal. Said President John Claiborne, "the bank could and probably would" have foreclosed on the $5 million now owed it by the company if stockholders had decided to continue mining at San Cristobal.

New Colgate Lineup

In the wake of Colgate President William Simms' unexpected resignation recently, comes a new rearrangement in top-level organization. Last week, the firm decided to form two separate divisions to handle the company's broad line of products to replace the single centralized management setup it has used in the past.

The new branches, each headed up by a vice-president with full responsibility for sales, advertising, market research and packaging, will be the Household Products Division and the Toilet Products Division. Research, purchasing and manufacturing operations will also eventually come under the new division managers.

Big Change: The move represents a major departure from former C-P policy, which characterized the firm as practically a one-man company under the forceful leadership of President Edward Little. Little had served as chairman and president since 1938 and until Joseph McConnell, former National Broadcasting Co. president, was named president in 1953. Then, in 1955, McConnell resigned, and Simms took over the post. Last month (*CW, March 30, p. 21*), Simms resigned, and Little again became president in addition to his continued duties as board chairman. Company officials have not as yet indicated a replacement for Simms.

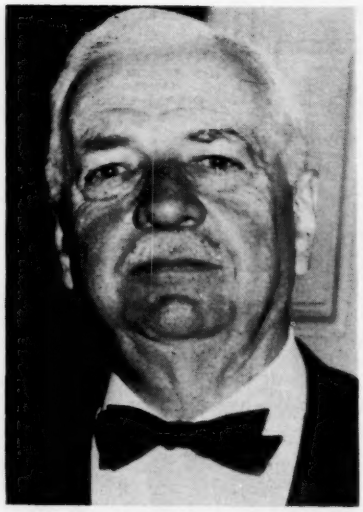
Plastic for Pipe

Allied Chemical's plans to manufacture low-pressure polyethylene molding resins have come to fruition. This week, the company reveals it has started commercial production of its new resin (which supplements its production of waxlike polyethylenes).

It's already passing most of its production along to Orangeburg Mfg. Co. for fabrication into pipe.

Allied's resin is being produced at the Semet-Solvay petrochemicals division plant at Buffalo, N. Y. (*CW, Feb. 2, p. 22*), by a process the company developed after 10 years' research.

Facilities at Buffalo are already being expanded to allow for greater production of resin, which the company feels is ideally suited for applications in low-friction, heavy-duty pipe. Pipe will be sold under the Orangeburg trademark.



WIDE WORLD

OAP'S TOWNSEND: He'll not 'sell a lawsuit.'

GAF: Decision Delay

The U. S. Office of Alien Property and several independent groups of stockholders in the Swiss holding company, Interhandel, last week signed a legal stipulation that would speed a decision in the GAF case. Interhandel itself is not involved.

Intervening stockholders in the Swiss firm have agreed to speed up their court appeals on the question of whether they can recover a share in General Aniline & Film Corp. proportionate to their Interhandel holdings. In return, the government has agreed to postpone its plans for sale of any vested stock. Opening of bids for the U.S.-held stock had been set for May 13 (*CW, March 23, p. 22*); now there is no definite date set for the opening.

As government lawyers see it, the speedup will make it possible for the U.S. Court of Appeals to rule before taking its summer recess, and for the U.S. Supreme Court to decide any further appeal soon after it begins its next fall term in October.

Reluctance: Justice Dept. attorneys say prospective bidders have been hesitant to "buy a lawsuit." And if the government did go ahead with its plans to sell the GAF stock now, it would have to take from $20 million to $40 million less than top value. Total value of the GAF property is estimated at well over $100 million.

Splinter Does Well

Split-up of the old I. G. Farbenindustrie after World War II seems in no way to have hampered operations of at least one of the splinters, Farbenfabriken Bayer (Leverkusen). Last year, the firm's earnings soared to postwar record heights, according to the company's just-released annual report. Too, the firm is again well established internationally.

In the U.S.: The report disclosed a series of new purchases and expansions abroad. Bayer now owns 50% of the voting stock of Chemagro Corp. (New York)—up from 33%. Chemagro was set up by Bayer and Pittsburgh Coke & Chemical Co. several years ago to promote Bayer's organophosphorus insecticides in the U.S. Chemagro is building a plant in Kansas City, Mo.

Bayer has also purchased a block of shares in Verona Chemical Co. (Union, N.J.), a dyestuff maker. Verona has recently purchased 100% of the stock in Pharma Chemical Corp. (New York).

In South America: In Brazil, Bayer is constructing new plants for the production of dyestuffs, sodium bichromate, organic tanning substances, pesticides, sulfuric acid and organic chemicals. These facilities should be in operation by 1958. The operating subsidiary will be Bayer de Brasil Industrias Quimicas SA (Rio de Janeiro). This represents a merger of three former Bayer subsidiaries: Companhia de Acodos SA, Alianca Comercial de Anilinas SA and Corantes e Insectidas Comercia e Industria SA.

Another Brazilian subsidiary, Chimica Bayer Ltd., which was returned to the parent company in '55, will start pharmaceutical production next year.

In Argentina, Bayer has bought Coloidal SA (Buenos Aires). In Mexico, the German firm has purchased an area near Mexico City to set up a plant to make pesticides, dyestuffs.

In the report, Bayer proposed increasing its capitalization from $131 million to $175 million. At the same time, shareholders' dividends would be increased to 10% from last year's 9%. Stockholders must vote on these.

Bayer reports spending $4.6 million for new laboratories during '56. Not counting such capital spending, the company has spent a total of $18.3 million for research since '48.

EXPANSION

Sulfonates: Surpass Petrochemicals Ltd. (Montreal) is building a $1-million plant near Scarborough, Ont., to produce 7 million lbs./year of petroleum sulfonates. The new unit, first of its kind in Canada, will also make lithium-based greases and synthetic lubricants. It's scheduled for completion this June.

•

Pulp Chemicals: Champion Paper & Fiber Co. will add a new chemical recovery smelter and precipitator to its Pasadena, Calif., plant. The smelter will recover chemicals, such as black liquor, used in conversion of wood into pulp and paper. Brown & Root Inc. will do the engineering, and Constructors Inc. (Houston) is the contractor. Cost: $2.5 million.

•

Phosphates: The joint Stauffer Chemical-Mountain Copper subsidiary, San Francisco Chemical Co. (Montpelier, Idaho), will begin work immediately on 360 acres of phosphate leases obtained late in March as the result of successful bidding in a government letting. The lease is immediately north of Bear Lake County, Idaho, in the Swan Lake phosphate rock mining district. Lower-grade phosphatic shales will be stockpiled and sent either directly to markets for soil application or to Leefe, Wyo., for beneficiation.

•

Salicylaldehyde: Heyden Newport Chemical Corp. is building a 1-million-lbs./year salicylaldehyde plant at Fords, N.J. The new unit, scheduled to go onstream in the first quarter of '58, will use a new catalytic process.

COMPANIES

Gulf Oil Corp. last week sold its entire holdings in Texas Gulf Sulphur Co. The offering consisted of 1,200,579 shares at $28.875/share, was described as "the largest secondary distribution of stock ever made outside the registration requirements of the SEC." First Boston Corp. heads the group of underwriters.

•

Archer-Daniels-Midland Co. has purchased the soy protein business of Drackett Co. (Cincinnati). ADM will also take over all Drackett facilities located in Evendale, O. Terms of the transaction were not revealed.

FOREIGN

Rayon/Israel: American investors, headed by Israel Rogosin, president of Beaunit Mills, Inc., will put $13 million toward a $20-million rayon industry in Israel. The Israel government will put up the other $7 million.

•

Pharmaceuticals/Australia: Sterling Drug Inc. (New York) will build a $2.5-million pharmaceutical plant in Sydney, Australia. The 250,000-sq.-ft. plant, among the largest drug plants in the Southern Hemisphere, will be used as an export base to several neighboring countries.

•

Sulfuric Acid/Mexico: Pan American Consulting Co., Inc. (Baltimore, Md.) will construct a 150-tons-/day sulfuric acid plant for Guanos y Fertilizantes, S.A., the Mexican government fertilizer agency. The $700,000 plant will be built in the state of Cuautitlan, where the government already has a 150-tons/day superphosphate plant. The government will ask for bids shortly for contracts to build a triple superphosphate plant at Coatzacoalcos, Veracruz.

•

Paper/Costa Rica: A paper mill that has been idle in Costa Rica for over two years, might be declared the first "regional industry" under terms of a free-trade zone agreement signed by five Central American nations. The government of Costa Rica will ask for this classification for the plant, which was built by a group of private investors for over $1 million and then operated for only a short while. Since the government made substantial loans to the plant, the mill is now, for all practical purposes, the property of the government. If it is declared a regional industry, all trade barriers to its business in the other Central American countries will be dropped. Tentative approval has been given to plans to erect a paper and cellulose mill in Honduras, as a regional industry.

•

Polyvinyl Chloride/Austria: At the end of the first stage of a long-range expansion program, Halvic Co. has increased polyvinyl chloride production from 1,000 metric tons in 1953, to 2,000 metric tons for 1957. Production is expected to be 8,000 tons by 1958. The company was formed by the Vienna nationalized banking institute Creditanstalt-Bankverein, the Swiss Solvay and Co., and British Imperial Chemical Industries.

•

Formaldehyde/Austria: Vereinigte Chemische Fabriken will increase formaldehyde capacity from 5,000 metric tons to 13,000 metric tons/year by the fall of this year. As this will be more than the company's requirements, the remainder will be exported.

•

Petrochemicals/Austria: An Austrian firm, Oesterreichische Sticstoff Werke (Linz), and a West German firm, I. G. Farben of Hoechst, are negotiating to set up an Austrian petrochemicals industry. First plant would be near one of the refineries of Oesterreichische Mineraloel Verwaltung, depending on which has the largest yield of ethylene.

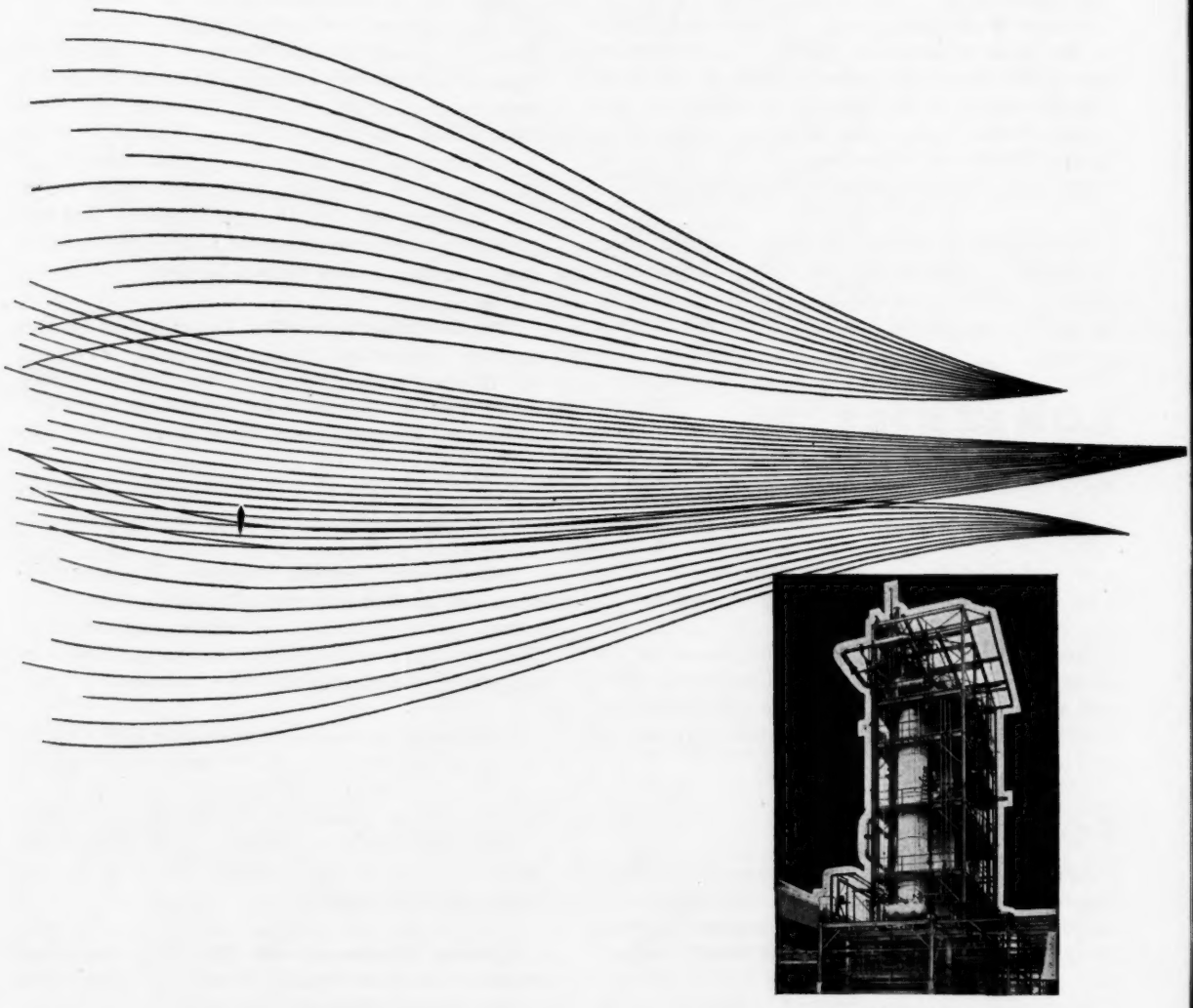
•

Ethylene Dibromide/Israel: The newly established Dead Sea Bromine Works Ltd. will produce ethylene dibromide for antiknock fluids under German patent rights. Capacity will be 1,900 tons/year.

Something you ought to know

about some people who are—

or can be—important to you . . . AND WHAT THEY ACHIEVED WITH LAURIC ACID.....



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KOPPERS

KOPPERS CHEMICALS

Washington
Newsletter

CHEMICAL WEEK
April 27, 1957

An entirely new approach to U.S. trade policy is being sought by those interests fearing the growing trend toward protectionism. It's too early to predict what the "free traders" may propose, but here are some of their main ideas:

- A complete rewrite of tariff classifications with authority to change duties in either direction by 25%.
- Sweeping changes in customs valuation procedures.
- Abandonment of the global approach to trade liberalization through the General Agreement on Tariffs and Trade (GATT) in favor of preferential arrangements with regional economic groupings, such as the European common market and free-trade zone, and with individual nations, such as Japan.
- Changing the provisions of the escape clause to protect labor and investment rather than products. This might be done by helping companies shift to new product lines.
- Compensation from public funds for firms hurt by tariff cuts.
- Tariff boosts for weak industries during a transition period, but subsequent automatic tariff cuts over a series of years.

The showdown will come in '58 as part of the fight to renew the reciprocal trade act. Outcome may decide whether the U. S. will turn toward protectionism or to free trade via international cooperation.

Both sides are girding for the big fight, but the protectionists have a clear edge at this stage. Their opponents in the Administration and Congress now concede that the Organization for Trade Cooperation (OTC) now has virtually no chance of passing Congress this session.

Next year, OTC will be linked with the reciprocal trade act. Both measures will run head-on into the drive being readied by certain domestic mining companies and others for legislated import quotas (*CW Washington Newsletter, April 20*). Protectionist sentiment is growing in Congress, will be stronger next year as Election Day nears.

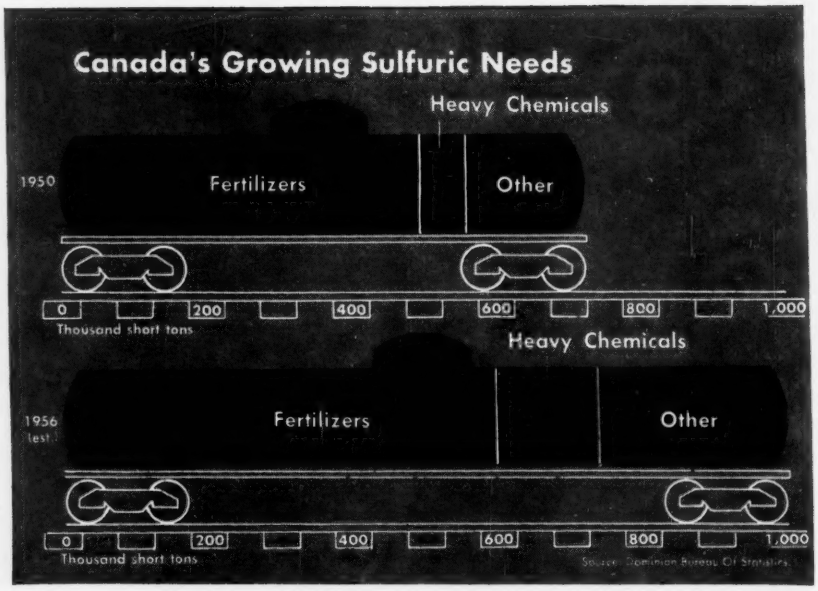
•

An investigation into tax benefits on overseas operations of U.S. oil companies is in the works. Congressional critics say such benefits are costing the U.S. Treasury many millions of dollars each year.

This would be the fourth investigation of the oil industry by Congress this year. While legislation seems unlikely, this kind of publicity weighs against approval of bills the oil industry would like—such as the proposal to free natural gas producers from price regulation by the Federal Power Commission.

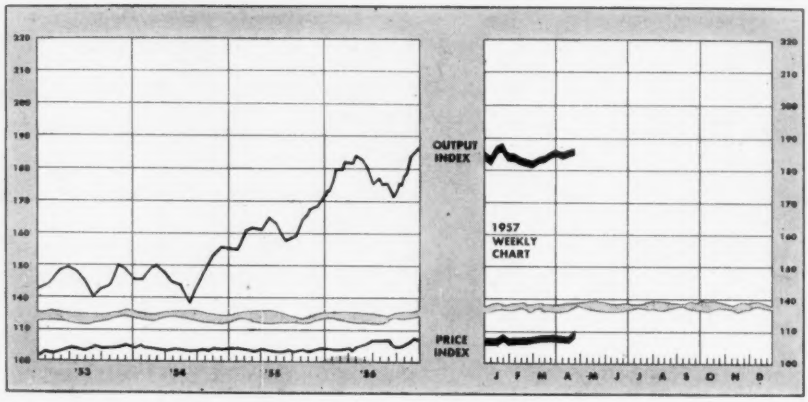
Charting Business

CHEMICAL WEEK
April 27, 1957



Big Growth in Heavy Chemicals

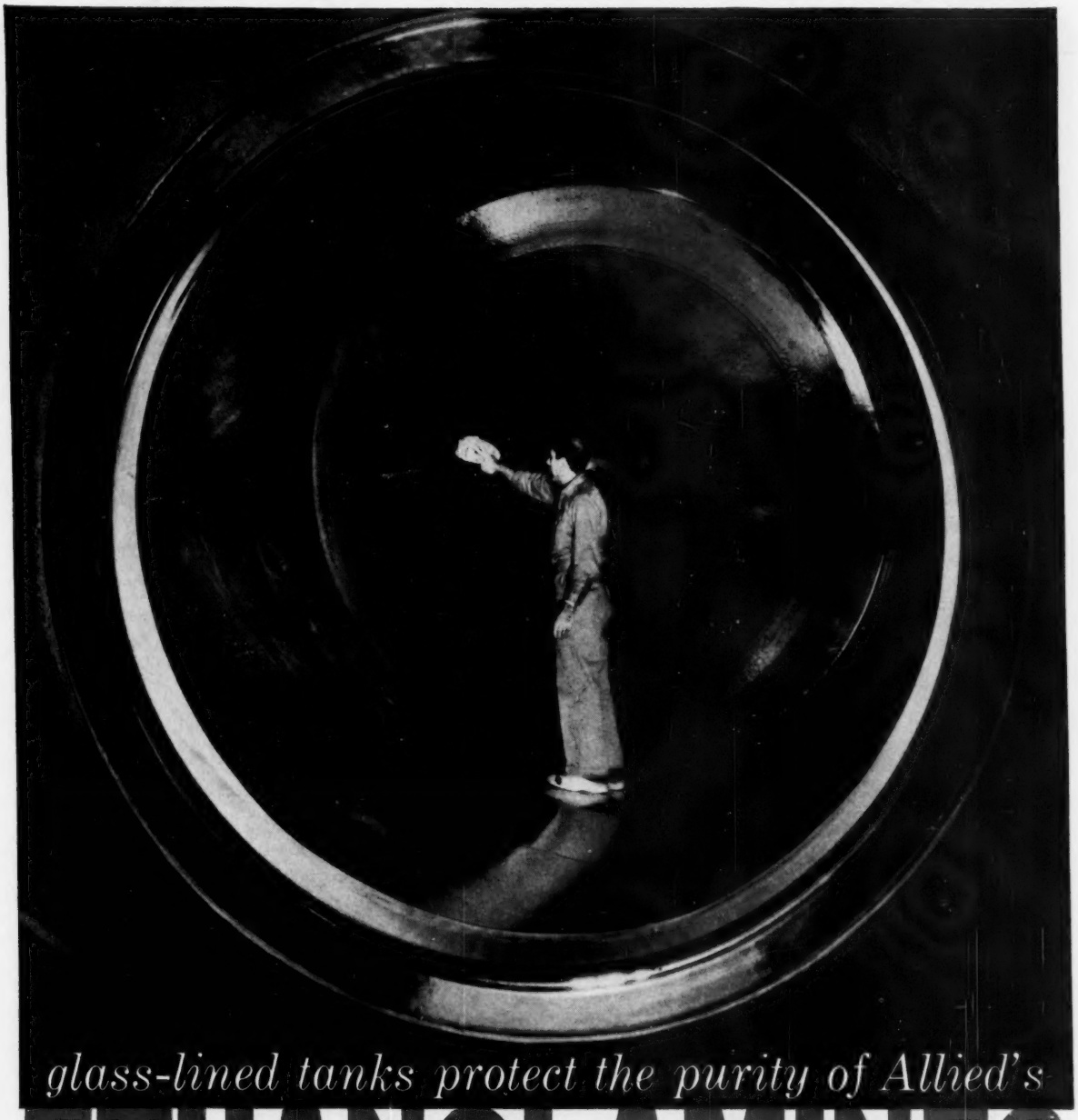
THE spiraling Canadian consumption of sulfuric, barometer of industrial activity, reflects the Dominion's booming expansion. Leading the line-up of "big-time" users of this product, of course, were fertilizer makers. Big growth came in heavy chemicals, where usage of sulfuric jumped from 50,000 tons/year in '50 to 150,000 tons in '56; use by pulp makers rose from 2,400 to 9,000 tons.



Business Indicators

WEEKLY	Latest Week	Preceding Week	Year Ago
Chemical Week Output Index (1947-49=100)	186.6	186.6	183.3
Chemical Week Wholesale Price Index (1947=100)	109.8	110.0	105.9
Stock Price Index of 11 Chemical Companies (Standard & Poor's Corp.)	42.93	42.75	49.97

MONTHLY—Trade (million dollars)	Manufacturers' Sales			Manufacturers' Inventories		
	Latest Month	Preceding Month	Year Ago	Latest Month	Preceding Month	Year Ago
All manufacturing	29,179	29,183	27,224	51,847	51,498	46,897
Chemicals and allied products	2,028	2,095	1,940	3,808	3,721	3,339
Petroleum and coal products	2,790	2,883	2,515	3,090	3,113	2,793



glass-lined tanks protect the purity of Allied's

ETHANOLAMINES

You are looking down the manhole of a 16,000-gallon, glass-lined Pfaudler storage tank about to be filled with an ethanolamine from Allied. Why glass-lined? To protect the excellent color and high purity of the chemical as it comes from Allied's stainless steel processing equipment.

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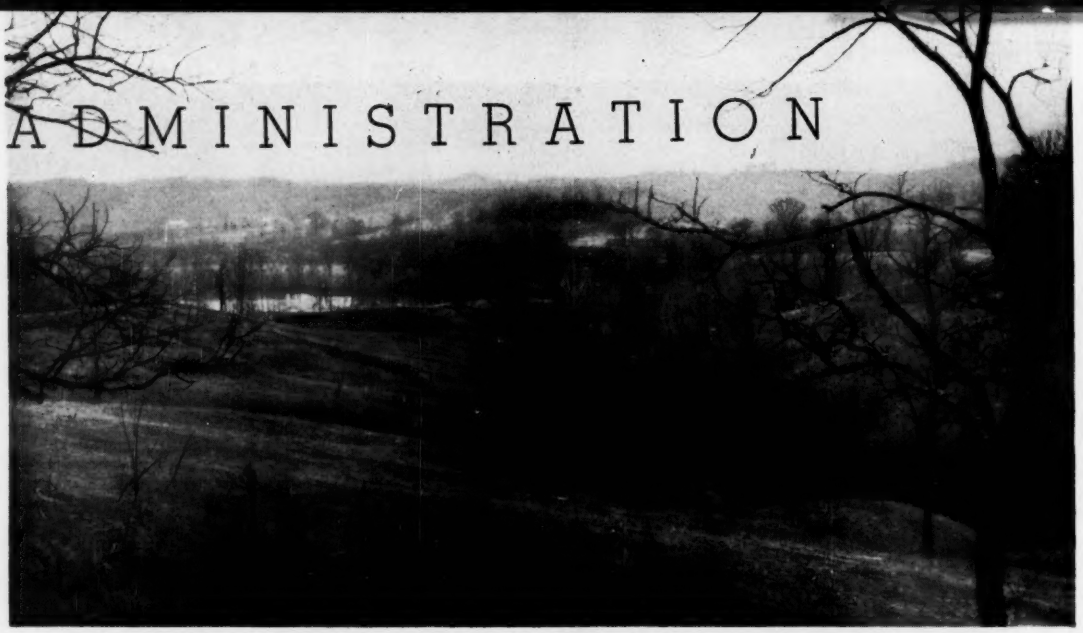


PRETTY POSER: West Virginia hills complicate problems of providing adequate housing for employees of . . .

Kaiser's Ravenswood aluminum plant. Scarcity of land and vital civic facilities caused Kaiser to join in . . .

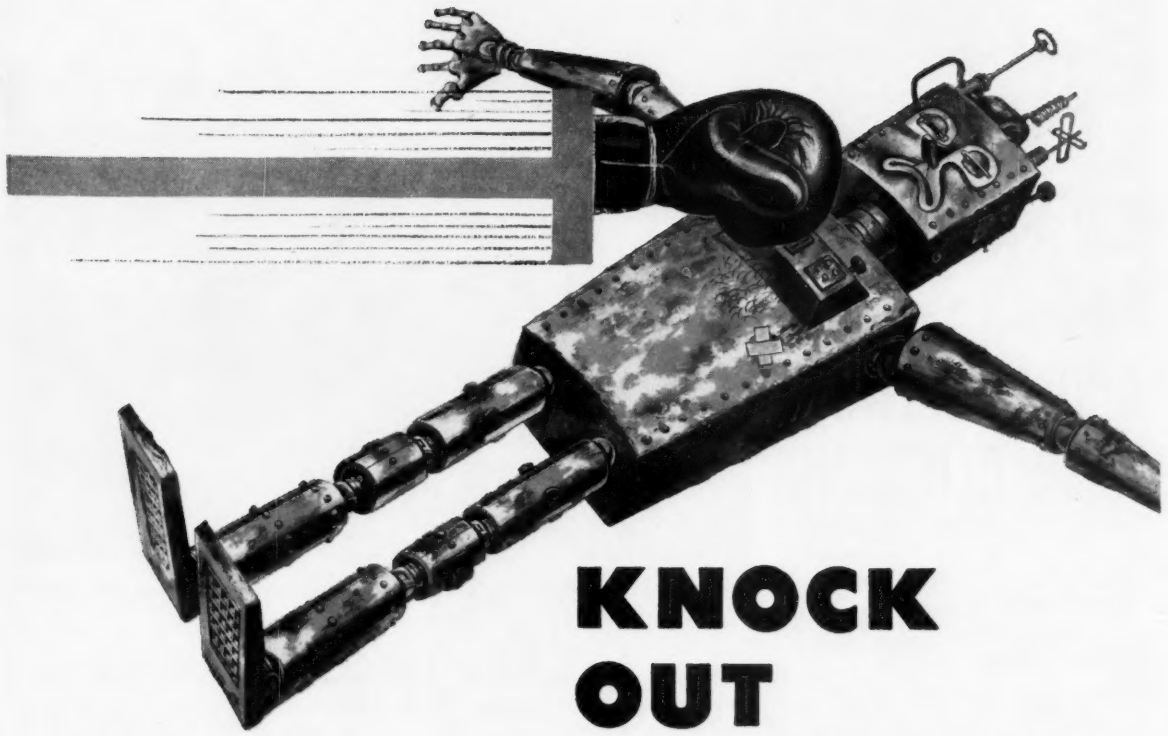
Building a New City for a New Plant

The townspeople of Ravenswood, W. Va., this week were presented a full-scale community development plan designed to help convert that predominantly agricultural and residential community into an industrial town almost twice its present size within a few years.

The donor: Kaiser Aluminum & Chemical Co. Outcome of the Kaiser gambit may well provide a benchmark for future industry-community relations.

The development plan—just one of many Kaiser Aluminum steps to gain community approval for its now abuilding $200-million Ravenswood Aluminum works— is necessary because the town itself is ill-equipped, both financially and by experience, to provide for the rapid growth that seems certain to accompany the startup of the new plant.

When, in Aug. '54, Kaiser Aluminum decided to move eastward by constructing additional plants, a corollary decision was to place all planned



KNOCK OUT CORROSION WITH ALKATERGE-T

Alkaterge-T is fulfilling its early promise of being an exceptional oil-soluble corrosion inhibitor. It passed two commonly used screening tests with the most gratifying results and industrial users are finding confirmation in practice.

At least part of its success is probably due to its very powerful adhesion to metallic and other hydrophilic surfaces. The force required to break this adhesion has been measured at 10,500 psi — highest of any compound tested. Alkaterge-T is a big molecule and with this adhesion, powerful protection would be expected by most corrosion engineers. But Alkaterge-T has a plus value, too. Mildly alkaline, it will tie up any trace of acidity that may develop, yet it is harmless to brass. This product, therefore, should be evaluated by every manufacturer of rust preventive oils, lubricants, cutting oils, extruding oils, transformer oils, corrosion resistant greases, and spinning and throwing oils for the textile industry.

Alkaterge-T is a powerful emulsifying agent for water-in-oil emulsions and is unaffected by hard water. As little as 1% will emulsify 80% water into aliphatic hydrocarbons and form a fluid, stable emulsion. In lubricating formulations, Alkaterge-T tends to prevent sludge formation resulting from moisture pickup and should be of interest in crank case flushing oils and fuel oils. It should also be evaluated as a liquefier for the water-in-oil sludges that present severe problems in automobile crankcases, fuel oil tanks and crude oil production.

For further information and samples, write Commercial Solvents Corporation today.

ALKERTERGE-T	TYPICAL PHYSICAL PROPERTIES
Color, Gardner (1933)	7
Solidification Point, °C	59
Interfacial Tension against water, 0.1% solution in mineral oil	1.8 dynes/cm
Surface Tension, saturated aqueous solution	30.4 dynes/cm
Flash-Point	None
Solubility in water at 25 °C	0.01 ml/100 ml

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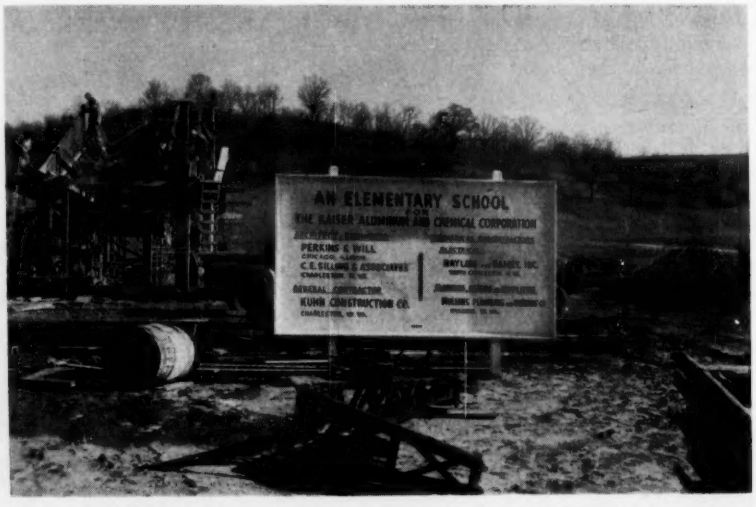
CITY PLANNERS*: Their job was to plan avenues of future city growth.

facilities in one location. Ravenswood was the choice—one prompted by the availability of power, access to raw materials through direct water transportation from Kaiser's Chalmette-Gramercy-Baton Rouge (Louisiana) complex (*CW, March 17, '56, p. 24*), proximity to a mainline railroad (B&O) and to the center of the aluminum market. Construction was to take place in three phases over a period of five years:

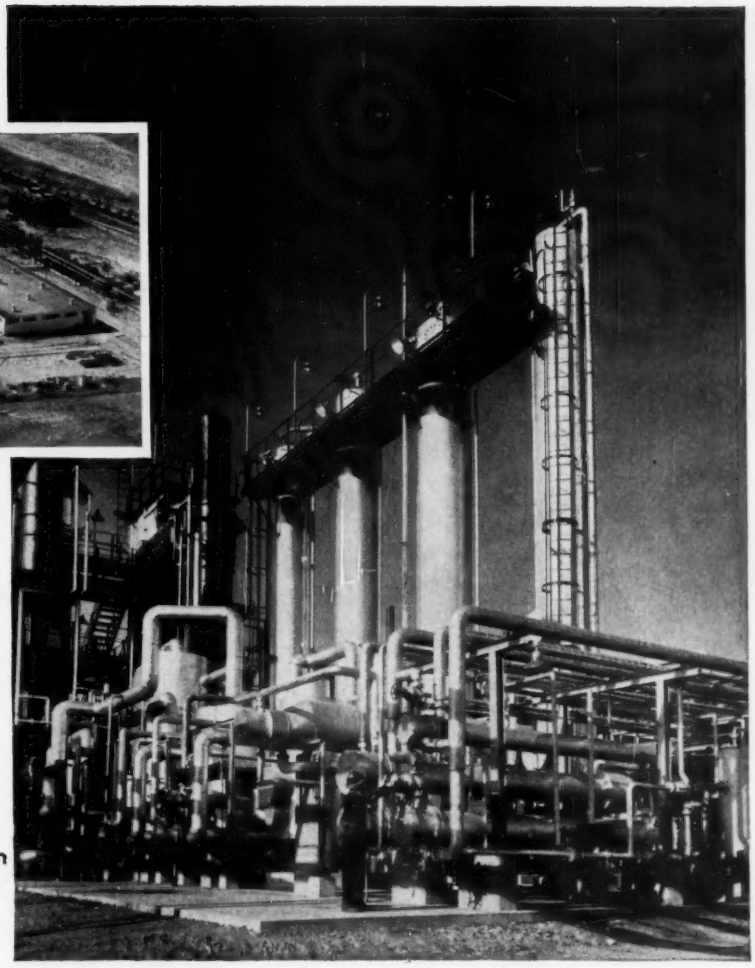
Phase one—a 72-million-lbs./year cold-rolling mill—was scheduled for completion in mid-'56. Phase two—a hot-rolling mill—was to be in operation early in '59. Phase three—a 440-million-lbs./year reduction plant—was due for construction as soon as the hot mill started rolling.

Program Stepped Up: But less than 14 months after the original announcement, the program was stepped up. The hot mill, employing about 2,000 workers and bringing 32 acres under roof, was rescheduled for completion in Oct. '57, and the reduction plant was to be operating by the same date. Result: just 38 months after announcing its decision to locate at Ravens-

* Left to right: Mayor Ritchie; Eugene Watkins, of the city planning commission; and Bill Finley, of Harold F. Wise Associates.



NEW SCHOOL: Problem—building a school faster than 'channels' permitted.



ISOCYANATES
at
National Aniline
Division
Allied Chemical & Dye Corporation

Girdler plant assures supply of
HYDROGEN and CARBON MONOXIDE

The aerial view shows the new isocyanate plant of National Aniline Division, Allied Chemical & Dye Corporation, at Moundsville, W. Va. Two basic ingredients for this processing are carbon monoxide and hydrogen and these are produced from natural gas by the Girdler gas plant shown above.

Girdler designs, engineers and constructs process plants like this, assuming unit responsibility to assure sound results. When you plan modernization or expansion, use our complete service. Call or write for further information.

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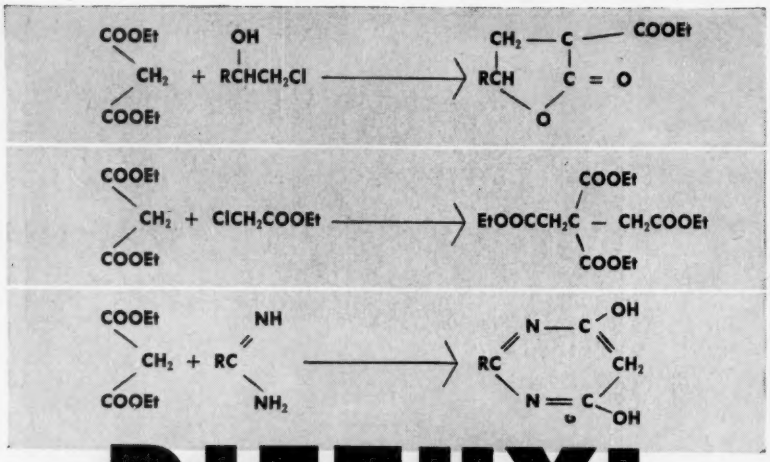
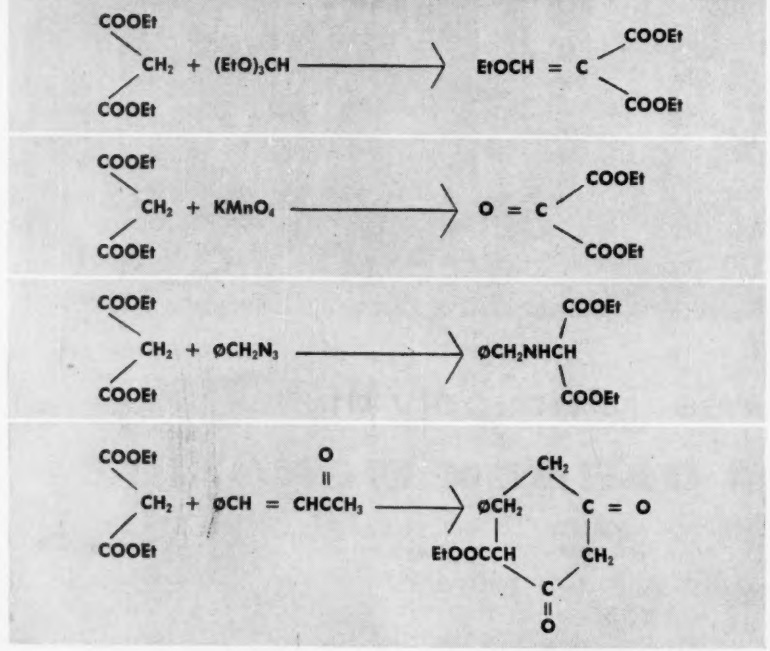


DIETHYL MALONATE



SPECIFICATIONS

purity	99.0%	minimum
nitrogen	.01%	maximum
acidity	0.1%	as malonic acid

TECHNICAL DATA BULLETIN AVAILABLE

KAY-FRIES CHEMICALS, INC.

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ADMINISTRATION

wood, Kaiser Aluminum's plant investment will top $200 million, cover 150 acres of a 2,600-acre plot, and employ 4,000 to 5,000 workers.

Consider the Community: The accelerated program brought immediate and pressing community relations problems. For one thing, school facilities were inadequate for the enrollment that could be expected. Houses would be urgently needed, and if the town was to expand its boundaries, it had to do so in a logical, efficient manner.

To assist in solving some of these problems, Kaiser Aluminum took two immediate steps: it called in the city planning firm of Harold F. Wise Associates to make a preliminary survey of future needs; it then began construction of a $500,000, 20-room elementary school. The school, to be leased to the county for $1/year, is to be ready by Sept. '57—faster than normal channels would permit.

To encourage construction of suitable and adequate housing, members of the city planning firm and Kaiser Aluminum's staff talked to bankers and builders, as well as to the Federal Housing Authority. To prevent speculation on the limited acreage suitable for housing—much of the nearby land is hilly (*see cut*) or subject to flooding—Kaiser took options on 1,000 acres to be resold to builders at cost.

Plant Welcomed: City fathers welcomed the new plant from the beginning, but they readily recognized the problems inherent in such rapid community growth. As one city official put it, "We fished for a long time and hoped and prayed a lot, too—even had a few nibbles—but who'd have thought we'd land a whale!"

In the fore of Kaiser Aluminum's efforts to assure for Ravenswood a smooth transition from an agricultural to an industrial community is Lloyd Amos, Kaiser's Ravenswood plant manager. Working closely with Ravenswood Mayor William Ritchie, Amos and his aides are promoting the plant with tours, movies and speeches.

A Kaiser Aluminum official at the firm's Oakland, Calif., headquarters explains the company's reliance on the plant manager to solve local community relations problems this way: "At Ravenswood, in particular, we're leaning over backwards to avoid implicating absentee ownership, landlordism, patronism or direction. Oakland pays the piper, but Amos calls the tune."

News from
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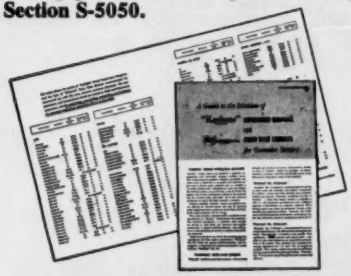
PROCESS EQUIPMENT BRIEFS

Extensive Corrosion Resistance Table on "KARBATE" Impervious Graphite Now Available

A new guide to selection and use of "Karbate" impervious graphite and "National" resin base cements in over 100 corrosive applications. 4-page booklet contains specific grade recommendations and information on field testing procedures. Request **Catalog Section S-5050.**



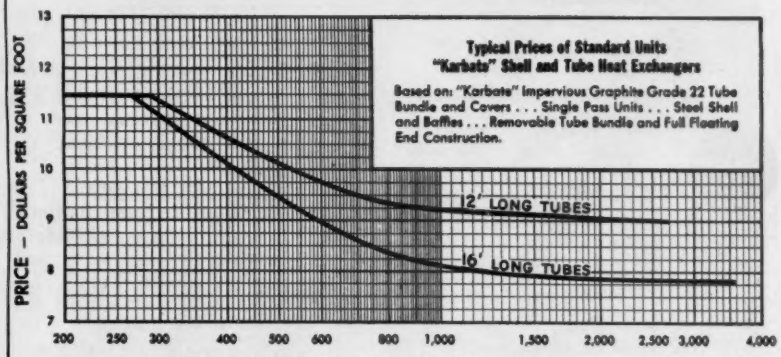
National Carbon Expands Carbon and Graphite Development Program

NIAGARA FALLS DEVELOPMENT LABORATORY

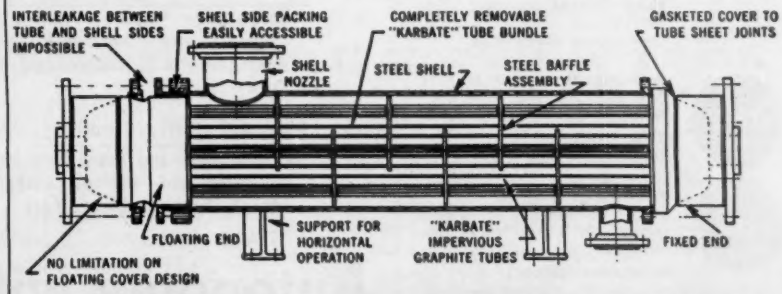
Maintaining its leadership in the broadening industrial use of carbon and graphite, National Carbon has expanded product development facilities at Niagara Falls, New York, to supplement new major research activities at Parma, Ohio. A large share of the expansion is devoted to development and evaluation of graphite anode materials for the electrolytic production of chlorine-caustic, chlorates, sodium and magnesium. The test room shown below contains miniature electrolytic diaphragm-type chlorine cells used in laboratory performance tests on "National" graphite anodes.

ELECTROLYTIC ANODE TEST ROOM

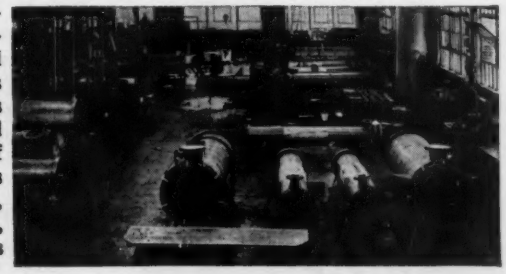
Quick Reference Chart Covers Prices of "KARBATE" Impervious Graphite Shell and Tube Heat Exchangers



New pricing charts on "Karbate" impervious graphite heat exchangers show their economy for all types of heat transfer involving corrosive fluids. Standard units assembled from stocked components, covering 16 shell sizes from 6" through 45" diameter and containing from 9 to 685 ⅞" I.D. impervious graphite tubes in 6, 9, 12, 14 and 16 ft. tube lengths, can be shipped in 3 to 5 weeks. Cut away view below demonstrates how sturdy, durable construction utilizes "Karbate" impervious graphite's corrosion resistance, immunity to thermal shock and freedom from metallic contamination in corrosive service. For price and product data, request **Catalog Section S-6800.**


INTERLEAKAGE BETWEEN TUBE AND SHELL SIDES IMPOSSIBLE
SHELL SIDE PACKING EASILY ACCESSIBLE
SHELL NOZZLE
STEEL SHELL
COMPLETELY REMOVABLE "KARBATE" TUBE BUNDLE
STEEL BAFFLE ASSEMBLY
GASKETED COVER TO TUBE SHEET JOINTS
FLOATING END
SUPPORT FOR HORIZONTAL OPERATION
"KARBATE" IMPERVIOUS GRAPHITE TUBES
FIXED END
NO LIMITATION ON FLOATING COVER DESIGN

View at right shows assembly and test facilities producing "Karbate" shell and tube heat exchangers. Units have "Karbate" impervious graphite tube bundles and covers assembled in shells of steel or materials such as glass or rubber lined steel, "Haveg" phenolic resin, aluminum or impervious graphite.



NATIONAL TRADE-MARK

The terms "Karbate" and "National", "N" and Shield Device are trade-marks of Union Carbide and Carbon Corporation

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COPPER CARBONATE
55% Copper as metallic. Light and dense grades.
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CUPRIC OXIDE
Minimum 76% Copper as metallic. Technical grade . . . NOT A BY-PRODUCT.

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SULFURIC ACID
LIQUID SULFUR DIOXIDE
Highest commercial quality, available in tank cars, tank wagons, ton cylinders and 150-lb. cylinders.
CHLOROSULFONIC ACID
Iron less than 1.0 ppm as loaded. Water white. Delivered in glass-lined tank wagons, also in stainless steel drums.
SODIUM HYDROSULFITE
T-C HYDRO is a dry, white, free flowing, crystalline powder of uniform particle size and structure. It is dust free, assuring highest stability and uniformity.
PARA TOLUENE SULFONIC ACID, ANHYDROUS
Other organic Sulfonic Acids.

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MONOHYDRATED ZINC SULFATE
36% Zinc as metallic. White, free flowing powder.
ZINC OXIDE
Secondary Zinc Oxide.

IRON
FERRIC IRON SULFATE
Partially hydrated, free flowing granular form. Available in bags or bulk.

MANGANESE
MANGANESE SULFATE
65% Mn SO_4. Designed specifically for inclusion in mixed fertilizer.
MONOHYDRATED MANGANESE SULFATE
93% Mn SO_4, H_2O. Highest purity, technical grade . . . NOT A BY-PRODUCT.
MANGANOUS OXIDE
Minimum 48% Manganese as metallic. Feeds, fertilizers, spray or dust grades.

Samples, specifications and detailed information upon request.

TC
TENNESSEE CORPORATION
617-629 Grant Building, Atlanta, Ga.

How OM Set Up Open House in a Caustic Plant

A company's staff executives, sandwiched in between local management (with authority to adopt its own plans) and division management (with veto pawer), figured in nearly every step as Olin Mathieson set up an open-house ceremony.

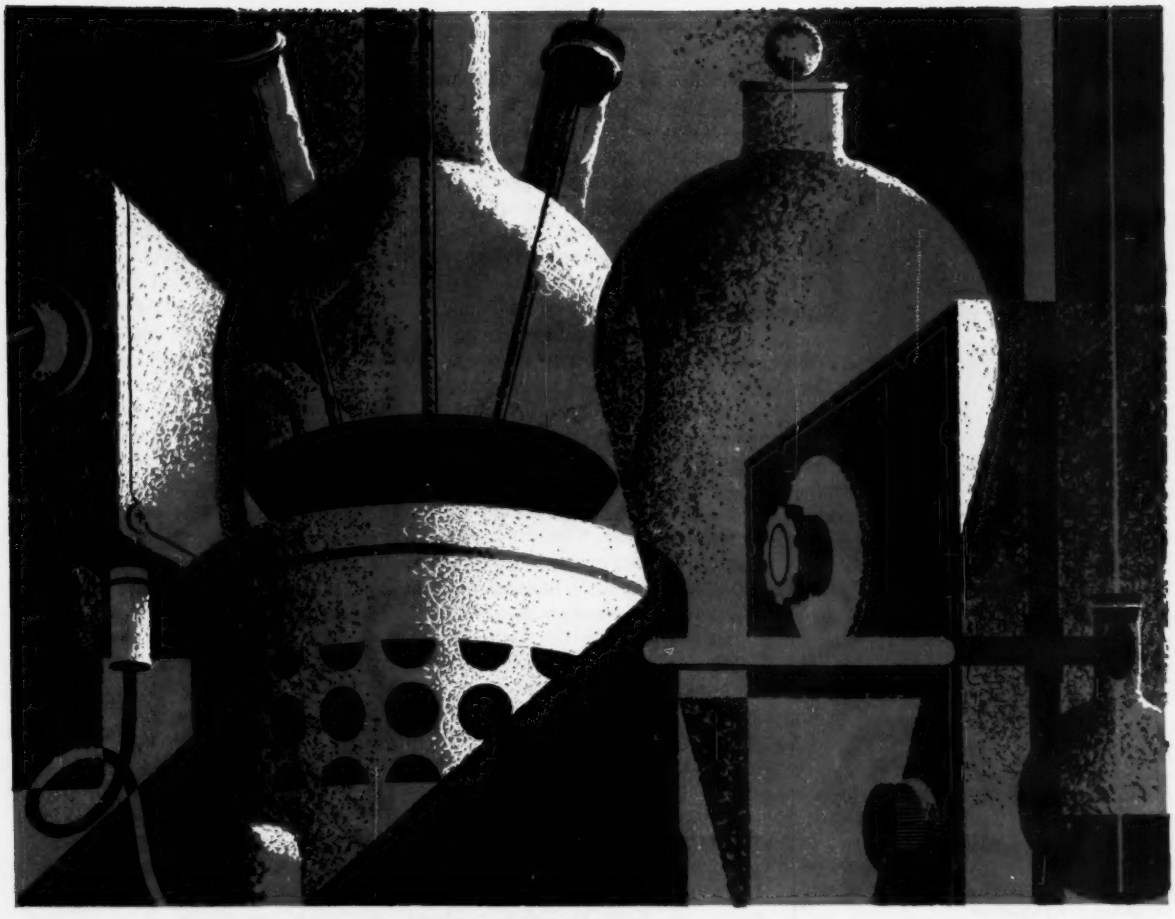
Step No.	Action	Result
1	Line-staff conference (Regular weekly meeting in Baltimore between division's director of operations and a corporate public relations staffer)	Idea evolved for open-house ceremony to publicize completion of $8-million expansion
2	Line-line conversations ('Phone calls from Baltimore to Lake Charles and McIntosh; meetings in Baltimore involving divisional executives)	Idea accepted by local management and approved by divisional management
3	Line-staff discussions (In meeting at McIntosh between two staff men from New York and Lake Charles and McIntosh plant managers)	Tentative program plan drawn up
4	Staff-to-line memo (Six-page memo from community relations staff member in New York to Lake Charles and McIntosh plant managers)	Detailed program plan submitted
5	Line-to-line and -staff memo (Seven-page memo from Lake Charles and McIntosh plant managers to Baltimore and New York)	Agreed-on program plan outlined for final approval and any further suggestions
6	Line and staff assignments (Committees and individuals asked to carry out various tasks in McIntosh and New York)	Arrangements made for receiving, guiding and entertaining visitors

Autonomy with Teamwork

Line-staff coordination can be effective even in a company as decentralized as Olin Mathieson Chemical Corp. This was proved again in the planning for the two-day open-house ceremony at Mathieson Alabama's chlorine-caustic plant at McIntosh. The plant's capacity has just been doubled.

From start to finish, this was a jointly executed maneuver, with staff employees proposing plans, and line executives accepting or rejecting them. In other words, staff people from corporate headquarters in New York served up suggestions. Management at McIntosh adopted a plan that was readily okayed by divisional management in Baltimore (*above*).

Middle-Management Pivot Man: Working sometimes with divisional executives and sometimes with plant officials, but always in an advisory role, were members of OM's corporate community and public relations staff—Bill Leonard, community relations



Continuing research has made LX-685 NEVILLE'S most versatile resin

In the few short years since it was introduced, Neville LX-685 has been employed with evident success in the preparation of an ever expanding group of products. A partial list of the uses for this versatile resin is on the right. If one of these applications is related to your product line, and you are not using LX-685, it might well pay you to write for literature or ask us for a sample. The Neville Technical Service Laboratory developed many of the present successful uses . . . perhaps it could help you too.

Present Applications:

Aluminum Paints, Brake Lining Compounds, Concrete Curing Compounds, Concrete Paints, Deck Enamels, Floor Paints, Gasket Stock—Oil Resistant, Gasoline and Grease-Proof Coatings, Gold Lacquers, Government Specification Coatings, Metal Coatings, Paper and Hardboard Impregnants, Pipe Coatings, Porch Enamels, Primers, Printing Inks, Shoe Soles—Cork Filled, Shoe Sole Compounds—GR-S, Slab Sole Stock, Traffic Paints

NEVILLE

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Please send information on LX-685.

NAME TITLE

COMPANY

ADDRESS

CITY NC 29 CW STATE

specialist; Bob Taylor, handling public relations for OM's Industrial Chemicals Division, and their assistants.

On the line management side, pivot man was Director of Operations Jim Newell at division headquarters in Baltimore. He helped hatch the basic idea—which originated during one of his weekly meetings with Taylor—then presented the idea to plant managers Charlie Hightower of the division's principal facility in the McIntosh-Lake Charles, La., area and Joe Wood of the expanded McIntosh works. Upon adoption of the plan by Wood and Hightower, Newell reported it to the two top men in the division, Executive Vice-President Donald Drummond and Vice-President and General Manager John Logan, who promptly gave their blessings as well as a few supplementary suggestions.

Next move was for Leonard and Taylor to confer with Wood and Hightower at the McIntosh site, where they noted the physical plant layout and discussed what should be included in the open-house program. After returning to New York, Leonard drew up a fairly specific plan for the occasion, which he then submitted in memo form to Hightower and Wood. One month later, the local men reported to Baltimore and New York the program schedule they had decided on. It was close to Leonard's proposal on most major points, but still it was their own choice.

End of Preliminaries: This ended the planning phase of the operation, leaving four weeks for making actual arrangements for the affair. Here again, the work was shared between line and staff employees: on-the-spot tasks were carried out by committees of McIntosh employees under the supervision of a three-man central committee headed by Wood; informational chores—such as preparation of a four-page bulletin, with pictures and description of operations at the McIntosh plant—were handled by Leonard, Taylor, and their assistants in the New York offices.

First day of the program was "Dignitaries Day," with local civic officials and industrial executives as guests. The second day—a Saturday—was reserved for employees' families and friends, as well as the general public of McIntosh and vicinity. Though public visiting has usually been considered inadvisable at chlorine-caustic plants, the McIntosh plant was deemed to be relatively free of hazards to safety (*see cut, below*).

Attaining a smooth-functioning line-and-staff relationship is never a snap, and the problem takes on an added dimension when decision-making authority is considerably decentralized, as in OM's corporate setup. But once achieved, such a relationship—as the McIntosh open-house indicates—can save line management many man-mind-hours without infringing on local management's authority to make decisions or impeding upper management's right to review those decisions.

VISITORS' VIEW: Through plate glass, a safe look at chlorine cells.

If you have chemical processes involving high vacuum evaporation, distillation, or vacuum cooling of corrosive materials, it will pay you to consider Croll-Reynolds corrosion resistant EVACTOR Units and condensing equipment.

C-R Steam-Jet EVACTOR Units can maintain absolute pressures down to 50 microns Hg. abs., depending upon your process requirements. Our engineers have made thorough studies of all of the latest corrosion-resistant materials, and can incorporate them into your installation as needed to guarantee long, dependable trouble-free service.

In order to assure you of maximum efficiency in your installation, we prefer to design the equipment to match exactly the vacuum, cooling or evaporating load conditions of your process. If you will furnish us with details, we will be glad to submit specifications and suggestions Write, wire or phone . . .

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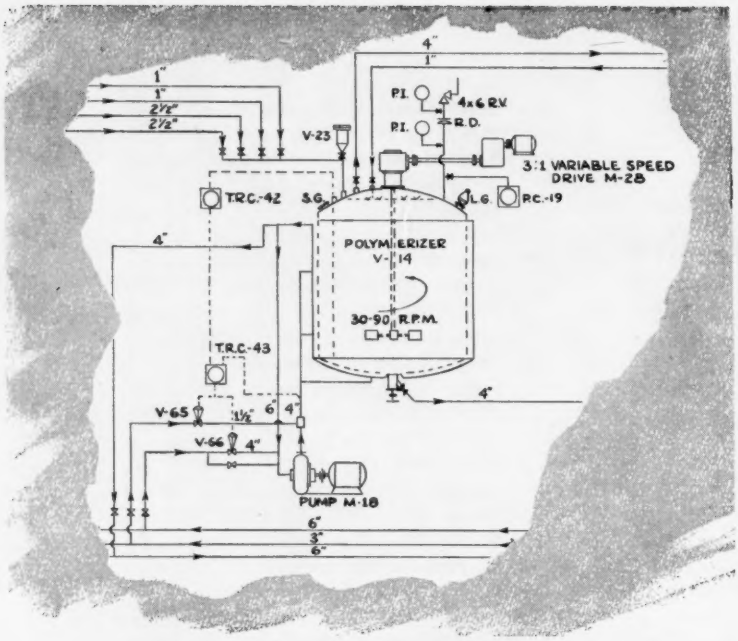

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ADMINISTRATION

WIDE WORLD

RANKIN: He's presenting the government's case on offshore minerals.

LEGAL

Offshore Hassle Renewed: The federal government and the state of Louisiana have moved closer to a decision on ownership of submerged lands in the Gulf of Mexico. While the present fight specifically concerns billions of dollars worth of oil lands, any decision by the U.S. Supreme Court demarcating federal-state jurisdiction in the area almost certainly will affect offshore sulfur deposits much as the Grand Isle dome six miles out, which Humble Oil and Freeport Sulphur will mine, with royalty payments going to the federal government (*CW, Sept. 29, '56, p. 21*).

In the most recent development in the case, the Supreme Court has taken under advisement lengthy arguments by both sides.

Louisiana attorneys—led by Scott Wilkinson, special assistant state attorney general—are contending that Louisiana is entitled to lands as far as three leagues, or about 10½ miles from the coast, by virtue of the 1953 Submerged Lands and Outer Continental Shelf Acts.

U.S. Solicitor General J. Lee Rankin—armed with a letter of support from Secretary of State John Foster Dulles—told the court that U.S. maritime boundaries long ago were set at three miles offshore, and since 1793 this limit has never been extended.

IDEAS

Executive Incentive Plan: General Aniline & Film Corp. will shortly present a total of $15,250 to 14 of its employees for "noteworthy achievements contributing towards the profitable operation of the company."

Employees of the company's Ansco Division at Binghampton, N.Y., will receive the greatest number of awards —presented as part of an executive incentive compensation plan.

•

Exhibit for Employees: Olin Mathieson's Industrial Chemicals Division this month staged a product exhibit for the 600 employees in its Baltimore headquarters to help make the work more meaningful to them.

•

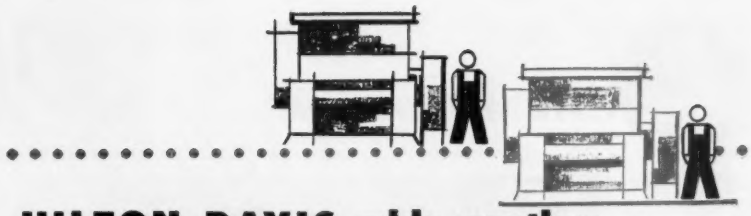
Student-Scientist Teamwork: American Cyanamid Co. recently sponsored "An Evening of Science" in which 150 students from 13 high schools in New York and New Jersey teamed with 50 scientists and technicians in demonstrations of the techniques that have produced antibiotics, sulfa drugs and vaccines at the firm's Research and Lederle Laboratories Divisions.

LABOR

Professionals in Unions: The question of collective bargaining for engineers, scientists and other professionals—always a difficult question for management—is due to be aired extensively over the next few months.

One focal spot is Minneapolis, where about 1,500 technical employees of Minneapolis-Honeywell Regulator Co. are scheduled to vote May 8 in a National Labor Relations Board election to determine whether they want to be represented by Engineers & Scientists of America or United Auto Workers (AFL-CIO) or neither. Most of these employees have been members of Federation of Honeywell Engineers, which until recently was affiliated with ESA. Both ESA and UAW opposed the company's move to include about 130 part-time student employees and about 80 cooperative-plan student employees in the proposed bargaining unit, arguing that these engineering degree candidates don't have professional status. NLRB ruled that employees in these two categories will be eligible to vote.

Also in the Midwest, attention is



HILTON-DAVIS adds another BAKER PERKINS VACUUM MIXER to their production facilities

Steadily increased demands during recent years for Flushed colors has made it necessary for the Hilton-Davis Chemical Co. of Cincinnati, Ohio, to continually expand their mixing capacity. Shown below is the latest Baker Perkins mixer that is now in service in "flushing" operations.

Baker Perkins "flushers" have been instrumental in making it possible for Hilton-Davis to produce economical, superior quality pigments that are noted for their excellent brilliance, fastness, and uniformity.

When you need good, dependable chemical mixing machinery that will help increase your production and keep your maintenance and operating costs low, it will pay you to consult a BAKER PERKINS sales engineer or write us today.

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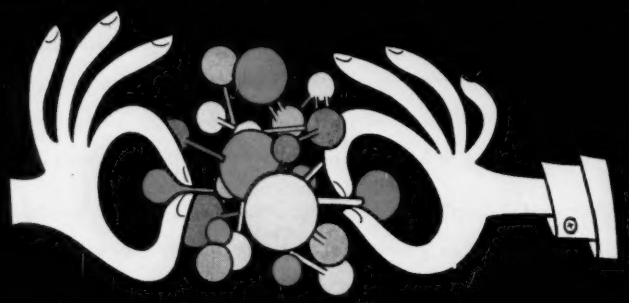
MIN CHEMISTRY *at work*

case: Sticky chemicals--and how a small quantity of M&C anti-caking agent will keep them free-flowing



Waxy, hygroscopic, sticky chemicals can clog up mills, form hard masses in plant equipment, ruin "shelf life," or make products hard to use.

Conditioner Report: M & C anti-caking agents are low-priced, neutral-colored, uniform, ultra-fine, grit-free, water-insoluble, inert materials. Through coating with these powders that stick where they're put, chemicals are "conditioned" against "tombstoning" caused by time of storage, pressure, atmosphere, temperature fluctuation, etc.

Due to light weight, high sorptivity, etc., often only 1% or less is needed for good conditioning of ammonium nitrate crystals or prills, ammonium sulfate, metallic and other soaps, resins, plastics, fertilizers, sulfur, napalm, chemicals for pest control and fire fighting, many others.

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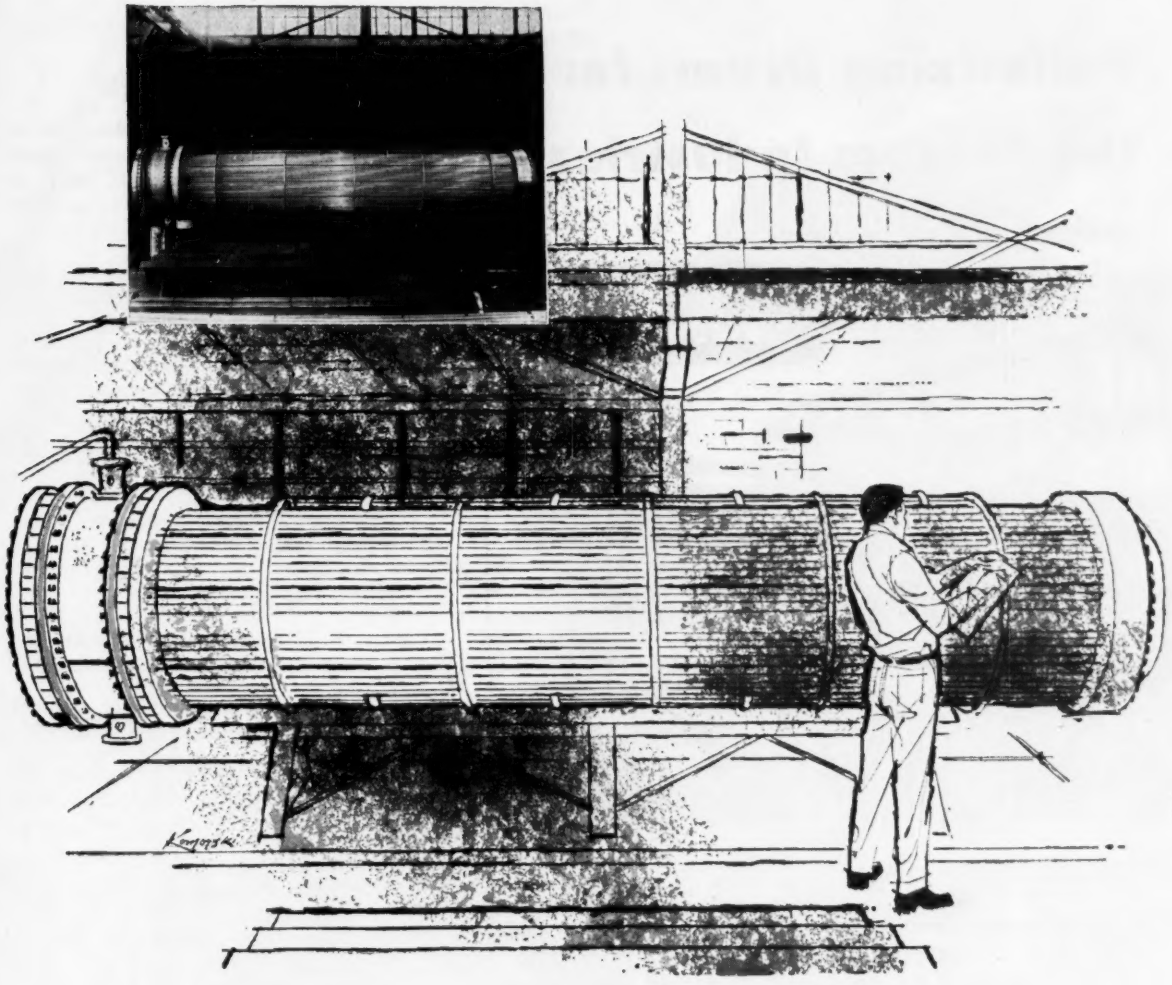
WIDE WORLD

AUTO WORKERS' WOODCOCK: For professionals, separate contracts.

on engineers and chemists at the Standard Oil Co. of Indiana refinery at Whiting, Ind., who—in a secret-ballot referendum—have voted to reject a company offer of a 4% general salary increase plus additional fringe benefits. The salary hike would have been retroactive to Feb. 1. Representing the 565 scientists at the refinery is Research & Engineering Professional Employees Assn., which calls the company offer inadequate on the ground that it fails to recognize alleged inequities in salaries for experienced personnel. REPEA has sought a 4% basic increase plus a 6½% inequity adjustment. A similar contention comes from Seattle Professional Engineering Employees Assn., which asserts that a recent study shows that "since 1953, the average salary growth of nearly all of the (Boeing) engineers surveyed was only slightly greater, if at all, than the increases in the salaries of beginning engineers."

Still another development in the struggle to organize engineers and other salaried employees: UAW Vice-President Leonard Woodcock has come up with a plan for accommodating skilled and office workers, engineers and technicians in UAW's plant-wide bargaining units. This plan —adopted at the union's annual convention at Atlantic City, N.J.— permits those groups to bargain for special supplementary agreements on top of the master contract for the overall plant unit.



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on these 100% aluminum Dilution Coolers

The exchanger illustrated is one of a number furnished by Western Supply Company, Tulsa, Oklahoma, for a recent low-pressure polyethylene installation. They selected Alcoa® Aluminum for this service because of its protection of product color and stability, good heat transfer properties and corrosion resistance. For the same reasons, aluminum has also found wide use in ammonium nitrate cooling, sour gas treatment and many low temperature processes.

As Western Supply Company sums up the case for Alcoa Aluminum Heat Exchangers: "In our experience Alcoa Aluminum is a sound, low-cost solution to many of the problems encountered in petroleum refining, natural gasoline manufacturing, petrochemical and chemical processing."

If *you* have heat transfer problems affecting tubes or other components of either the channel or shell side, investigate aluminum! Aluminum offers corrosion resistance and good heat transfer properties at minimum cost, and has excellent physical properties at extremely low temperatures. Get details in the FREE BOOKLET, *Alcoa Aluminum Heat Exchanger Tubes*. Mail the coupon today!

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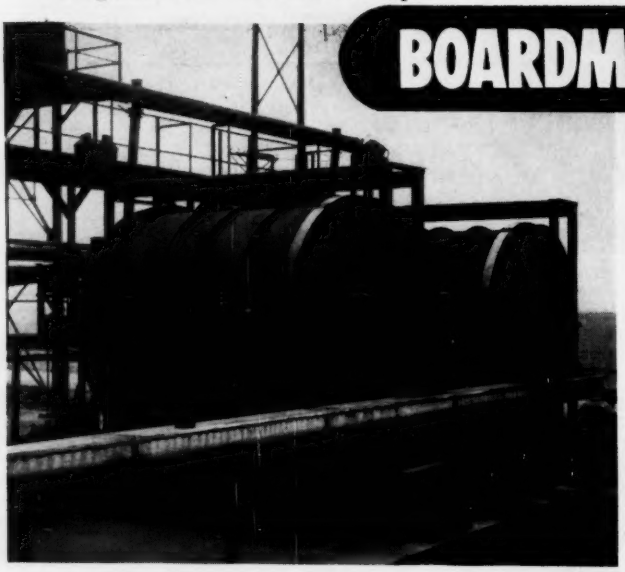

*At Sunray, Texas, Continental Blacks, Inc. operates these two drums to pelletize carbon for packaging. BOARDMAN designed and fabricated this equipment to the customer's exact specifications. These drums play a big part in producing for Continental a uniformly-granulated product with a minimum of dust separation.

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ADMINISTRATION

KEY CHANGES

Norman E. Alexander, Joseph Harris, William Steinschneider, Ralph S. Stillman and **Howard F. Vultee,** to directors, Sun Chemical Corp. (New York).

Ben King Harned and **W. Paul Torrington,** to directors, Mead Johnson & Co. (Evansville, Ind.).

Earl C. Ray, to manager, market development, Harshaw Chemical Co. (Cleveland).

William J. Quinn, to counsel, Chemical Division, Merck & Co.

Paul T. Clark, Arthur W. Weber and **Amory Houghton, Jr.,** to vice-presidents, Corning Glass Works (Corning, N. Y.).

B. F. Armbruster, to treasurer and controller, Nuclear-Chicago Corp.

Arthur W. Gilbart, to assistant to the president, Freeport Sulphur Co.

Fred R. Sheldon, to manager, research laboratory, Becco Chemical Division, Food Machinery and Chemical Corp.

Norris D. Embree, to director of technical operations, Distillation Products Industries, a division of Eastman Kodak Co.

Carl R. Gloskey, to manager, Process Development Division; and **R. W. Couch,** to manager, electrochemical research and development; Metal & Thermit Corp. (Rahway, N. J.).

George H. Williamson, to vice-president in charge of West Coast activities, American Chemical Paint Co. (Ambler, Pa.).

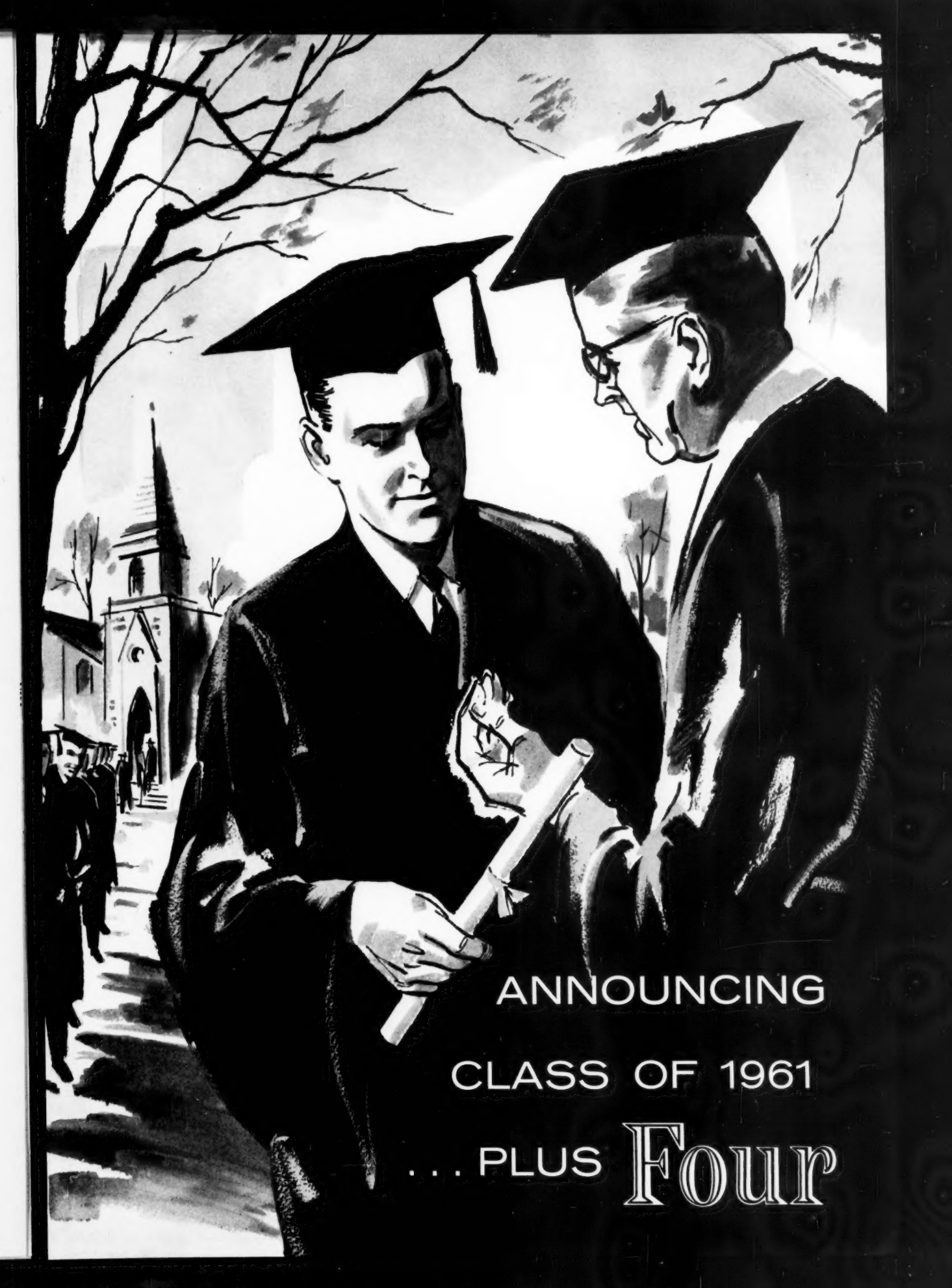
John A. King, to director of research, Armour and Co.

Joseph A. Howell, to consultant for agricultural chemicals, Commercial Solvents Corp.

Donald A. Buck, to director of research, Winfield Brooks Co., industrial and consumer chemical products manufacturer (Woburn, Mass.).

DIED

Homer C. Fritsch, 62, executive vice-president and director, Parke, Davis & Co. (Detroit), at Montreal, Que.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Solomon Juneau High School
Milwaukee, Wisconsin

Ralph C. Christensen
Helix High School
La Mesa, California

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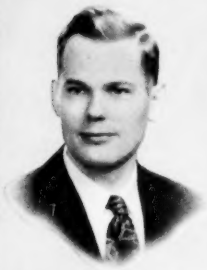
El Cerrito, California

Joseph W. Magann, Jr.
Northwest Classen High School
Oklahoma City, Oklahoma



David G. Brant
Basic, Incorporated
Maple Grove, Ohio

Irving D. Canton
Armour Research Foundation of Ill. Institute of Tech.
Chicago, Illinois

J. H. Coates
Ebasco Services, Inc.
New York, New York

Joseph J. Conlon
D. M. Bare Paper Co.
Roaring Spring, Pennsylvania

Hans Dannenberg
Shell Development Company
Emeryville, Calif.

Dr. Walter P. Ericks
The Upson Company
Lockport, New York

Rolland J. Gladieux
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After careful screening the Committee, appointed by the American Chemical Society, has judged these four to be best qualified to continue their education in science and engineering.

Victor also congratulates the 20 Talent Scouts for original and helpful ideas on ways to alleviate America's shortage of young scientists. Their suggestions made them eligible to nominate a high school graduate for a Victor scholarship.

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Margaret N. Mutimer
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New Brunswick, New Jersey

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Minnesota Mining & Mfg. Co.
St. Paul, Minnesota

Ezra Schacht, Pres.
Schacht Electric Company
Houston 3, Texas

Jacob G. Sharefkin
Brooklyn College
Brooklyn, New York

W. Jerome Smith
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Howard Snow, Pres.
Southern Friction Materials Co.
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The Dow Chemical Co.,
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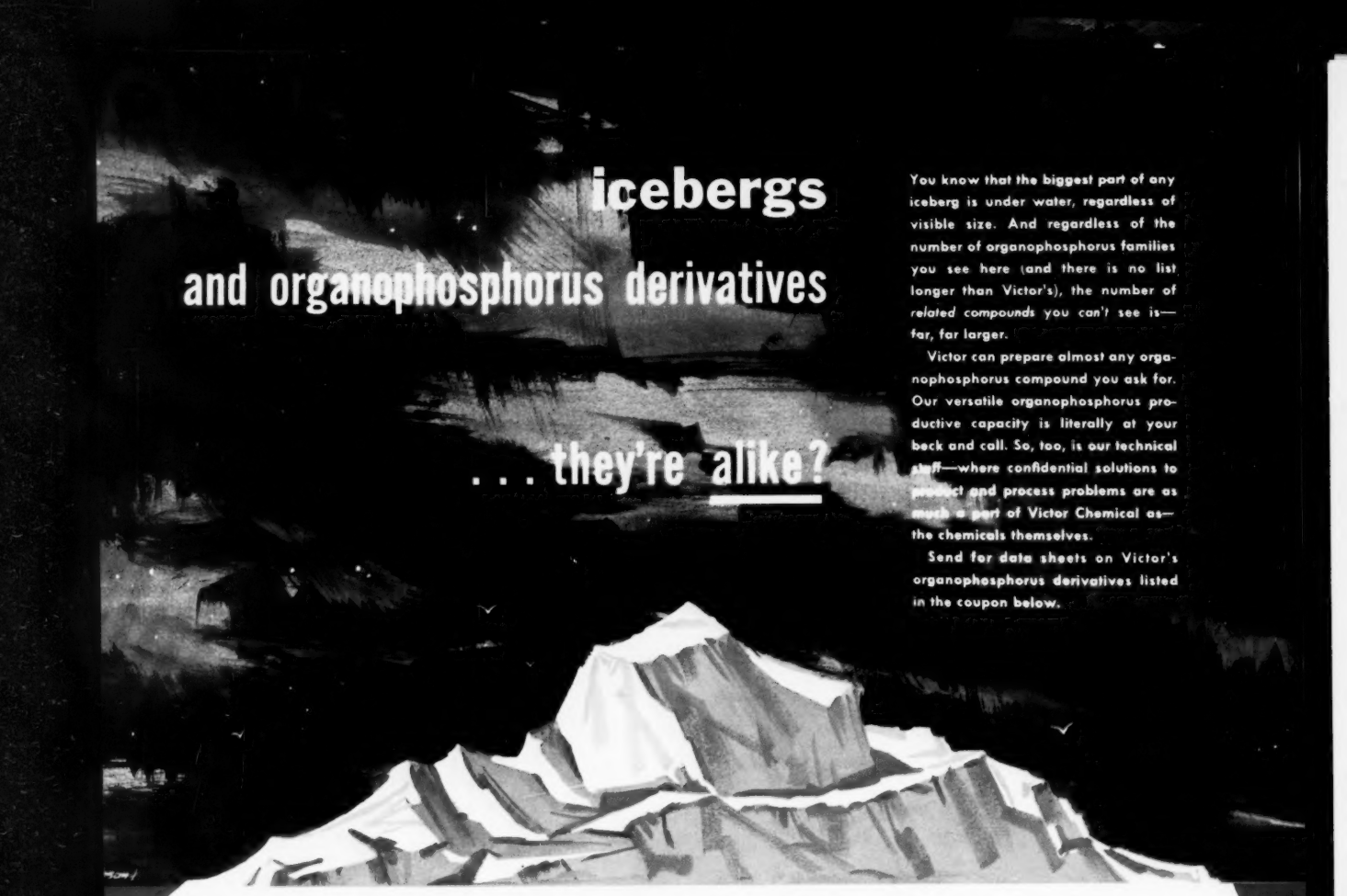

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Victor can prepare almost any organophosphorus compound you ask for. Our versatile organophosphorus productive capacity is literally at your beck and call. So, too, is our technical staff—where confidential solutions to product and process problems are as much a part of Victor Chemical as—the chemicals themselves.

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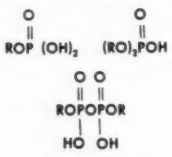
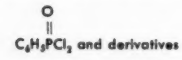
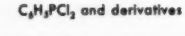


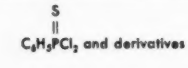
Phenylphosphonic Compounds



Phenylphosphonous Compounds



Phenylphosphonothionic Compounds



Chloromethylphosphonic Compounds

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Dialkyl Phosphorochloridates (Dialkyl Chlorophosphates)

Dialkyl Phosphorochloridothionates* (Dialkyl Thionochlorophosphates)

Surfactants

Vinyl Light Stabilizers

*U.S. Patent 2,715,136

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- ☐ Dialkyl Phosphorochloridates (Dialkyl Chlorophosphates)
- ☐ Dialkyl Phosphorochloridothionates (Dialkyl Thionochlorophosphates)
- ☐ Surfactants
- ☐ Vinyl Light Stabilizers

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Can We Afford a $71.8 Billion Budget?

THE BUDGET submitted to Congress by President Eisenhower for the year beginning July 1 proposes federal spending of $71.8 billion. In only four years, three during World War II and one during the Korean War, has the government spent more. Under the proposed budget the government expects to collect $73.6 billion, mostly through individual and corporation income taxes.†

The principal reason for the size of the budget and for this year's increase is an expanding defense program. About 60% of all budget expenditures in the coming fiscal year will be for national security programs. Moreover, this area accounts for about 90% of the proposed increase in federal spending. In addition, as the chart shows, there are large expenditures proposed for purposes other than defense.

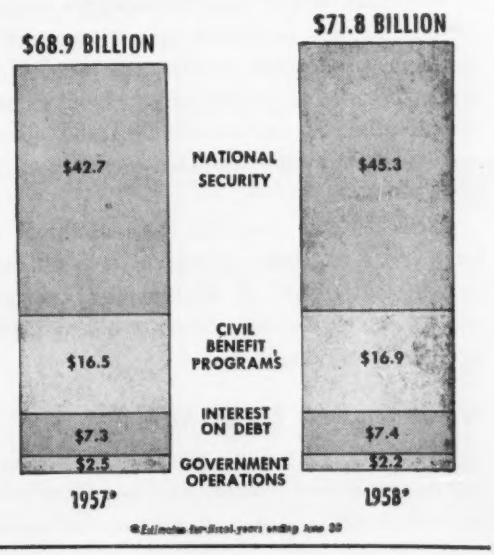
Continued budgets of this size, some contend, will lead to inflation and wreck our economy. It has been suggested that they might lead to "a depression that will curl your hair." Yet many insist that the budget, large as it is, still is inadequate in many respects — for defense, schools, agriculture, small business, health, research, indeed, for almost every activity in which the government has become involved.

Is It Really Too Big?

Actually, the proposed budget would place no greater burden on the economy than any budget in the last six years, because our economy has been growing. Federal spending per capita under the proposed budget will be about $416, or $10 more than this year; but our per capita income rose almost $80 last year. And, because of our increasing population, next year's expenditures will, in fact, amount to *less* per capita than in 1954 when federal spending was $4 billion lower.

Another way of measuring the burden of government expenditures on the economy is to compare the purchases of goods and services of all branches of government — federal, state and local — with the total output of the nation. The share of our national product taken by government this year will be about the same as in the past two years and, furthermore, about the same as the average for the past 28 years.

By the standard of any recent year, the budget is within the means of the American economy. In this sense, we can "afford" it. But the pros-



†*These figures refer to the regular federal budget and do not include operations of trust funds, primarily for social security programs and the new federal aid program for highways, which are financed by special taxes.*

pect of steadily increasing budgets, requiring 20% or more of our national income, introduces another threat.

The Real Threat

Large and rising budgets that do not balance government spending with higher tax collections clearly would be inflationary and would destroy the value of the savings and income of all who lagged in the race with climbing prices. But serious dangers will still exist even if our budget continues to be balanced, as this year's is.

- **Budgets that require a large take in taxes eat up the savings required to finance private industry.** What the taxpayers must give the government they cannot save. This deprives private industry of the savings and resources needed to expand and modernize producing facilities.
- **High tax rates also undermine the incentive to save and invest in normal business enterprises by taking such a large share of any income gained.** Taxes on corporation income now take 52% of all income over $25,000. And taxes on individual incomes can take as much as 90% of earnings that remain after this 52% bite.
- **High taxes encourage, on the part of both individuals and corporations, the search for "gimmicks" and special treatment.** As a leading character in Cameron Hawley's novel *Executive Suite* observed: "To a far greater degree than most people realize, income tax has become a primary governing factor in corporation management." Indeed, it is only because of the numerous gimmicks and special provisions now available that high tax rates have not already inflicted greater damage to economic incentives.

These dangers comprise the real threat of large and rising federal budgets. It is a threat to continued growth of our economy, and it is no less a threat merely because the budget is technically in balance.

What Should Be Done?

In attempting to hold government spending within reasonable bounds, we should *not* hold back on needed civilian programs. The heavy demands now being urged at all levels of government for roads and schools, for instance, are largely the result of failure to keep pace with the growth of the country. Furthermore, we cannot cut provisions for national security below the minimum level of safety. And unhappily, defense in the rocket and missile age is fantastically and ever increasingly expensive.

What we *can* do is enforce some financial discipline on our military leaders, and hold down our defense expenditures by making sure their demands are justified and by requiring efficiency. In the civilian programs, though some need to be increased to serve a growing economy, we can eliminate the outright waste.

A More Difficult Job

We must also do something far more difficult, and that is to reduce federal programs of aid to special groups at the expense of all the taxpayers. The new budget calls for over $5 billion for veterans, and another $5 billion for farmers. A number of industries and areas stand to receive aid in large amounts based less on necessity than on political pressure. These demands for increased aid, year after year, must be resisted if we are to have any hope of stopping a relentless rise in our budget.

Then, as our national income increases, we can look forward to reducing tax rates and providing greater incentives for the private sector of the economy. **Only in this way — by keeping government spending in line with economic growth — can we prevent our federal budget from being a crippling burden.**

This message is one of a series prepared by the McGraw-Hill Department of Economics to help increase public knowledge and understanding of important nation-wide developments. Permission is freely extended to newspapers, groups or individuals to quote or reprint all or parts of the text.

Donald C. McGraw
PRESIDENT

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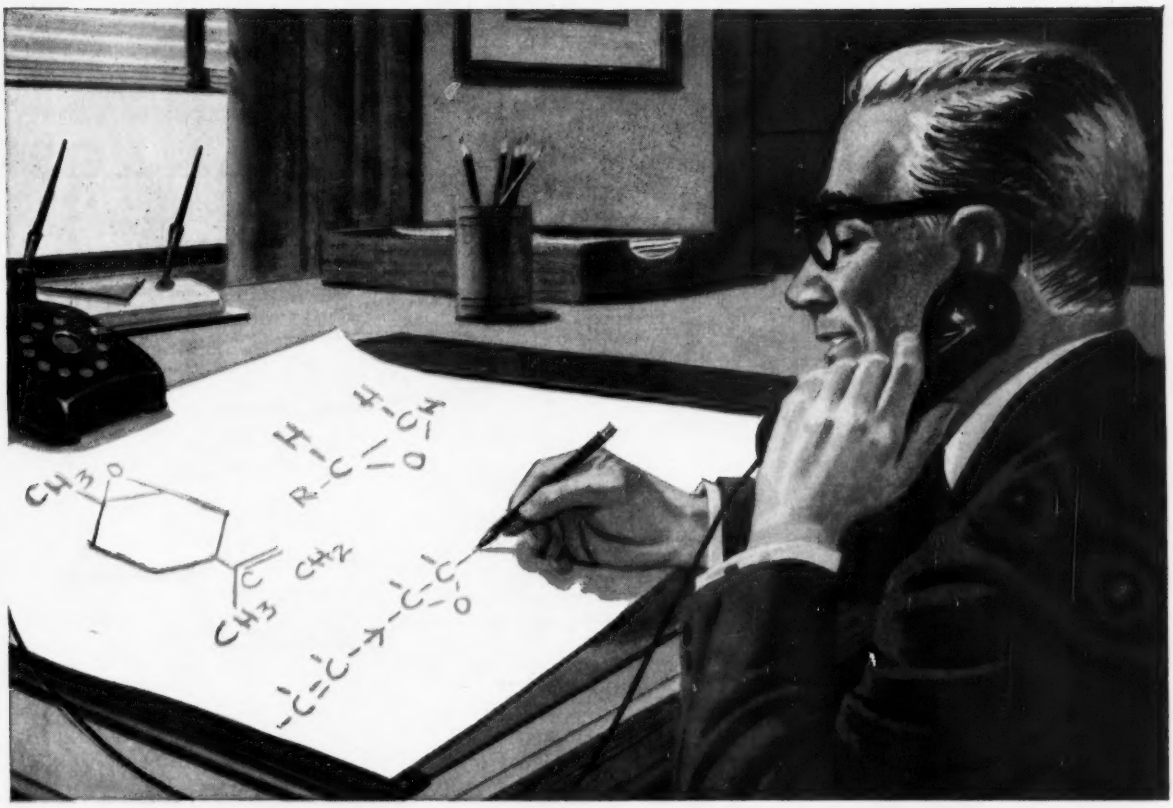

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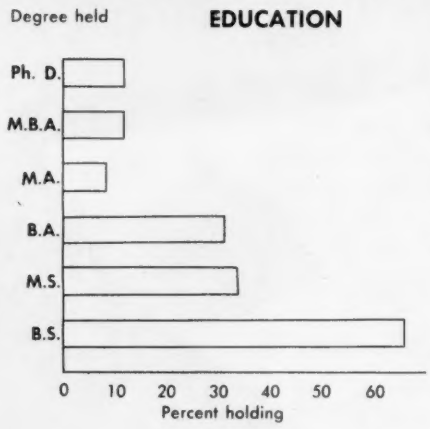
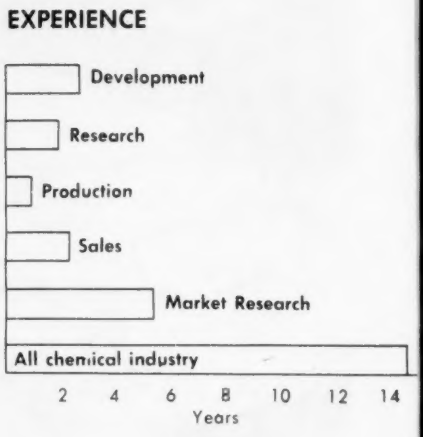
MARKET RESEARCH MANAGER—

HIS BACKGROUND





STATISTICALLY speaking, today's average market research manager is 39½ years old, draws a salary of $13,691 before expense allowances. (About 80% earn between $9-$19,000/year.) He's spent 14½ years in the chemical industry and 5 years and about 5 months in market research. In a year's time, he'll log 18,800 miles, make about 132 outside calls to gather data.

About 24% of the market research managers will make 200 or more calls, will travel 30,000 or more miles. Oddly enough, the market research manager belongs to 3.6 trade associations, twice as many as the average chemical salesman. Some 43% of the market probers are members of 4 or more trade groups. *CW's* survey covered research managers who are members of Chemical Market Research Assn.

Market Research: The Neophyte

It's an unusual chemical company that had a formal market research department before 1948. A just completed *CW* survey points up the fact that five-sixths of all such departments have been established within a 10-year period, and that 40% of these have been in existence for five years or less.

These facts point up the responsibility of an executive whose decisions can well have a substantial bearing on a company's investment in new plants and thus in its future sales—the manager of its market research department. Who is he? What is his background? What does he do? And what, really, is a market research department, and where does it fit into a company organization? Here, for the first time, are the answers about a company "growth department," provided via a *CW* survey of the members of the Chemical Market Research Assn.

About 73% of the CMRA respondents to *CW*'s survey operate in a formally organized market research department. The remaining 23% function in some other company department, usually development. Separate and distinct departments for market research are a relatively recent innovation.

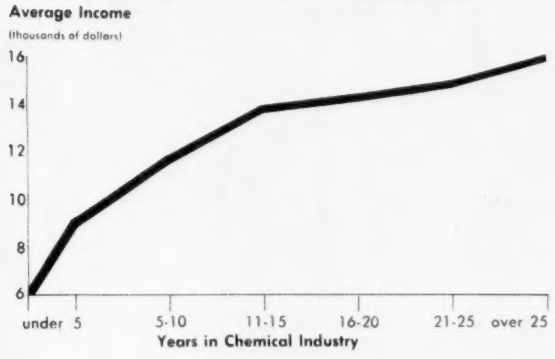
The majority (52%) of research departments report to a vice-president responsible for marketing, development and research, or general administration. About 23% of the departments are responsible to the manager of development; in 12% of *CW*'s sample, the company president himself is the man to whom they report.

Wide variation exists in budgetary practices. The largest single group (43%) operates on a combination of a fixed annual budget and individual authorization for special projects. Some 31% work on only a fixed annual allowance, while 17% operate strictly on a separate-budget-per-project basis.

MAN ON THE MOVE

HIS INCOME

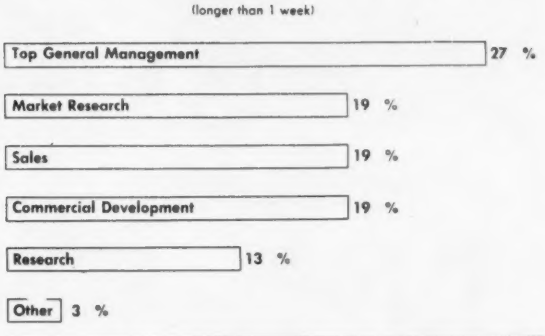
What Market Research Managers Earn



THE SALARY of market research managers is comfortable. It averages out to $14,188 for those with 16 to 20 years of chemical industry experience. Generally, income rises with age or years of industry service. Average salaries by age brackets: 25-29, $8,500; 30-34, $10,944; 35-39, $12,909; 40-44, $15,478; 45-49, $15,714; over 50, $17,714. The salary for respondents classifying themselves as section managers, project leaders or market research directors was slightly lower than that of departmental managers: average income was $13,000—14.4 years of service.

HIS WORK

Where Market Research Projects Originate



How Much Time Market Studies Take

te Sets a Fast Pace

How Much? Expenditures of individual companies or divisions for market research vary enormously, and only a few generalizations are possible. But broadly speaking, some 73% of company divisions reported that market research costs 0.10-0.5% of sales. Data for entire companies show a somewhat different pattern. About 36% spend between 0.10-0.5% of sales on market probing while some 32% estimate expense between 0.10-0.50% of sales.

The budget trend over the past five years in market research has been upward. A third of those surveys report a "marked" increase in their budgets, figured as a percentage of company sales. Another third report a "moderate" sales percentage increase. And 31% report no change in budget as a percent of sales. Only 2% report a decrease here.

In the next 10 years, that trend should continue with

MARKET research managers are busy men. During the year, the typical manager works on 45 projects, each taking less than 1 day to complete; 18 projects requiring 1-5 days; 9 studies needing 1 week to 1 month's time; and 9 assignments consuming more than 1 month's work. Approximately one-third of his time is devoted to recurring or continuing projects. And while most of the working time is chalked up to market research, some 33% perform purchasing research studies on products bought by the employer. In submitting research results to management, more than 93% of the department managers usually make both interpretations and recommendations.

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HIS PROBLEMS—
How Severe Are They?

(Average percent answering)

	Big Problem	Moderate Worry	Small or No Worry
Data requests on items of minor importance	11%	40%	49%
Insufficient market research manpower	37%	41%	22%
Management recognition of market research	14%	29%	57%
Communications within company	9%	50%	41%
Cooperation of outside sources of data	5%	24%	71%
Cooperation of other company departments	4%	25%	71%
Poor use of data submitted	4%	34%	62%
Limited opportunity for advancement	5%	22%	73%

only limited change. Approximately 23% of those contacted expect "marked" budget jumps, while some 46% of the departments answering the survey looked for "moderate increases." About a third (32%) anticipated that budgets (as percent of sales) would remain essentially "constant." And significantly, no respondent expected a decrease of any sort. That data indicates a sharp step-up in absolute market research spending.

Manpower Worries: The upward trend also focuses attention on what appears to be the market research manager's most serious problem—lack of manpower (*see table, p. 70*). Almost four out of 10 said "insufficient manpower" was a "big" problem and an almost equal number termed the problem "moderate." Because almost two-thirds of all market researchers have a technical degree, the shortage of chemists and chemical engineers alone is likely to make the situation worse before it can get better.

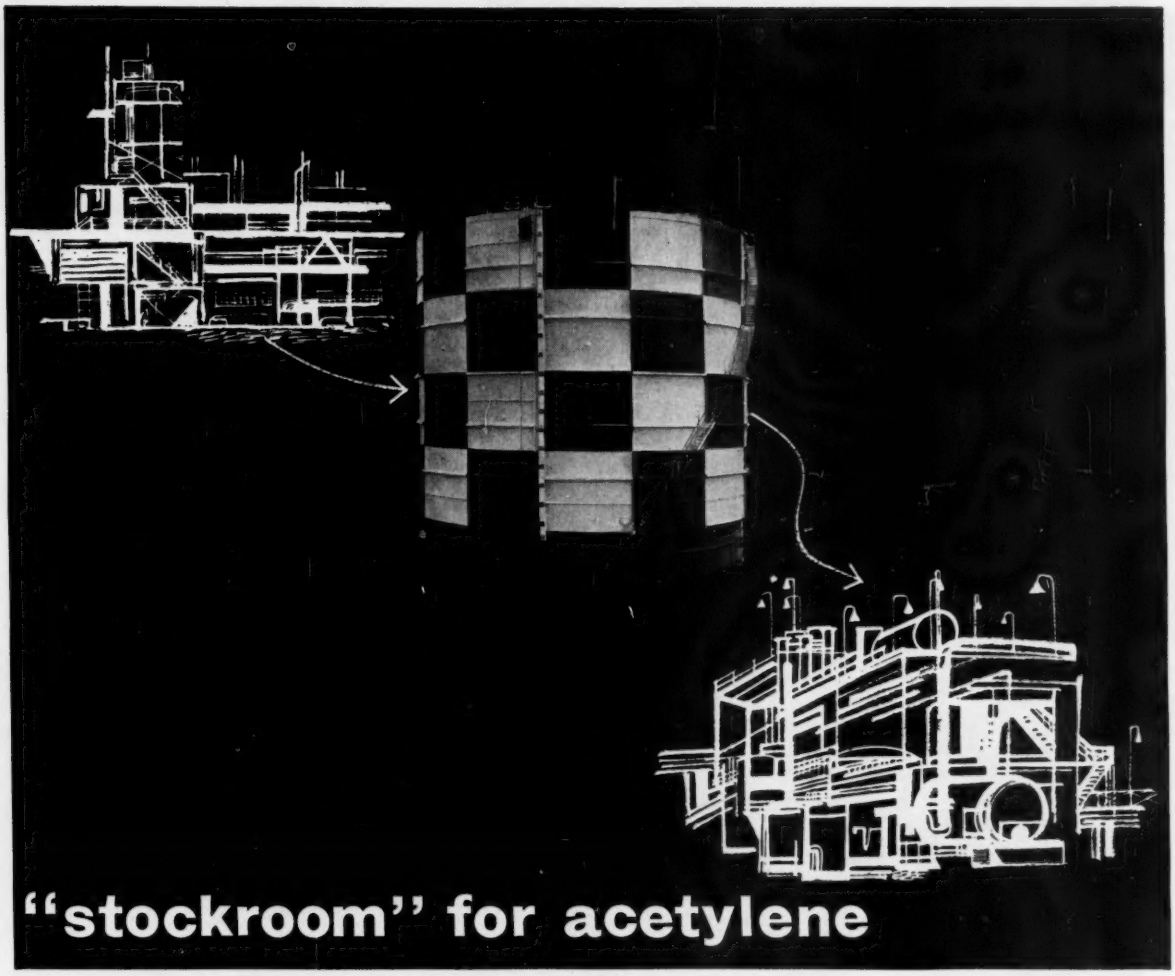
In some cases, lack of manpower or need of a "crash" program or secretiveness forces market research departments to turn to outside consultants for aid. But such use is not regular. Only 2% of the survey respondents say they use consultants frequently. Some 63% use them "occasionally," 26% "seldom," and 9% never.

Obviously, while companies have increased their market research spending in general, the outside specialist is used only in special situations.

How big is the roster of market specialists? One indication comes in CMRA's own membership, which, since 1940, has risen from 13 to about 500. This plus the trend to formal organization of a market research department and the increase in departmental budgets all indicate one fact: market research has helped give companies a multimillion-dollar payoff.

Behind the Survey

To amass data on market research, CW mailed questionnaires to 442 of CMRA's membership of 500. Excluded: consulting firms and independent market researchers. Although 17% of CMRA's members are in top management, most are department managers (54%) or market analysts (29%). Of the 194 replies, only the 92 from those classifying themselves as "department manager" were used in this study.



Linde purchases Wiggins Gasholder for storage of acetylene between production and use cycles

When Linde Air Products Company's new acetylene plant in Montague, Michigan goes "on stream", a new 100,000-cubic-foot Wiggins Gasholder will play a vital role in the operation. Every cubic foot of acetylene produced will pass through the "stock-room" on its way to DuPont for use in the production of Neoprene. The gasholder will provide acetylene storage and will serve as surge capacity to enable Linde to satisfy both normal and emergency requirements.

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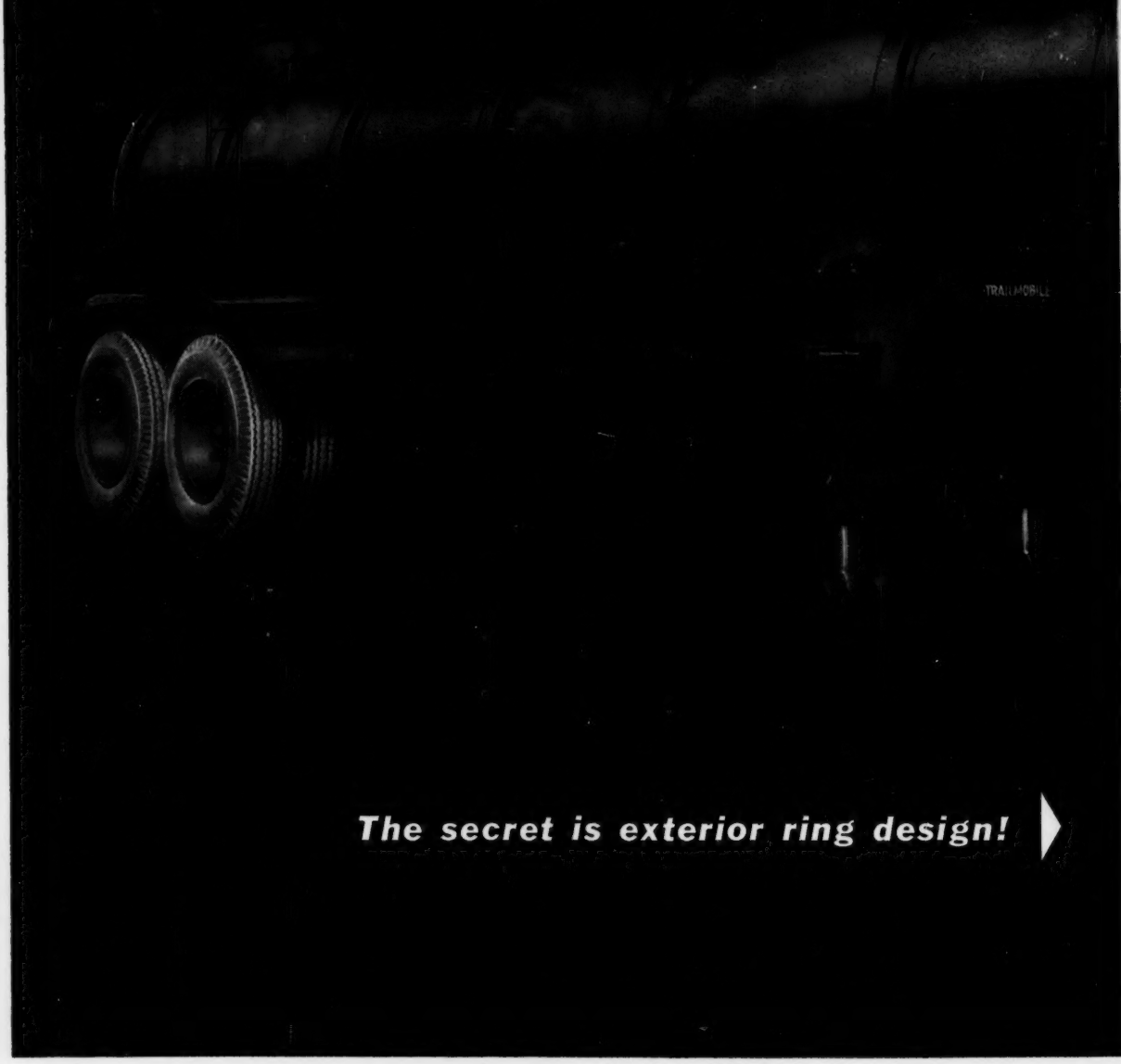
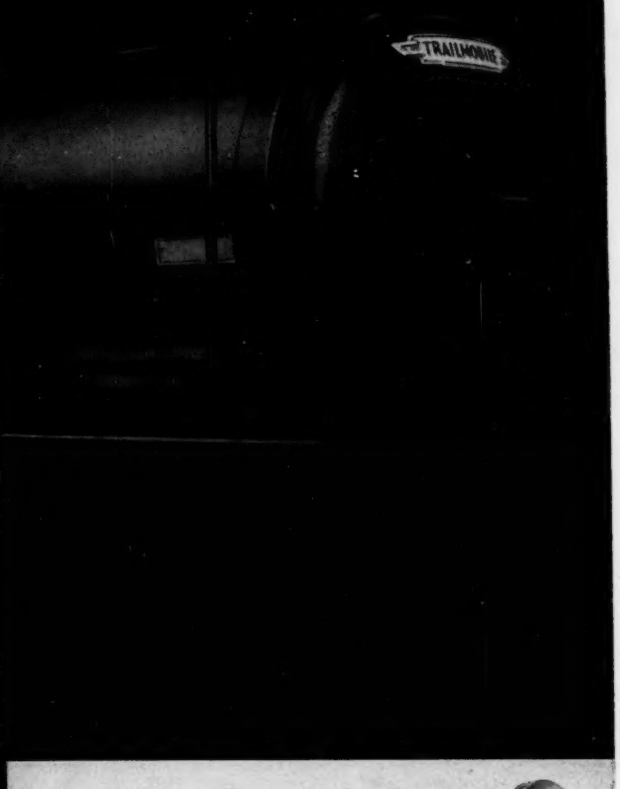
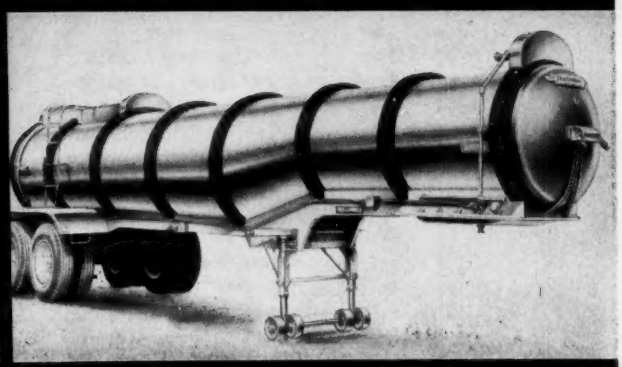


The secret is exterior ring design!

tank trailer...





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Maas

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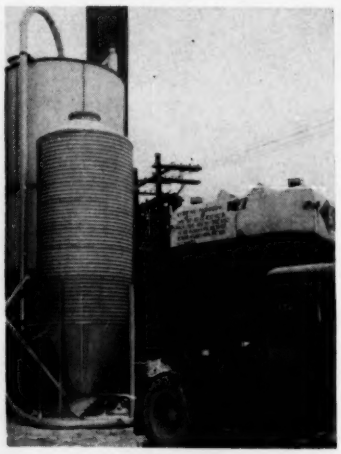
SALES

Facts from Farmers

Although agriculture is the chemical industry's second-largest market, precious little is known about what makes a farmer buy—or even whether the reasons can be pinned down. The National Plant Food Institute is launching a national survey to probe the factors influencing farmers to buy fertilizer. Allied Chemical's Nitrogen Division, too, has a similar motivation study under way, hopes to find answers to such questions as "What is the role of the farmer's wife in fertilizer sales?" Plant nutrient usage, say agricultural scientists, should be at least twice the present level. Thus, the institute's survey may well point out how the fertilizer market can be expanded.



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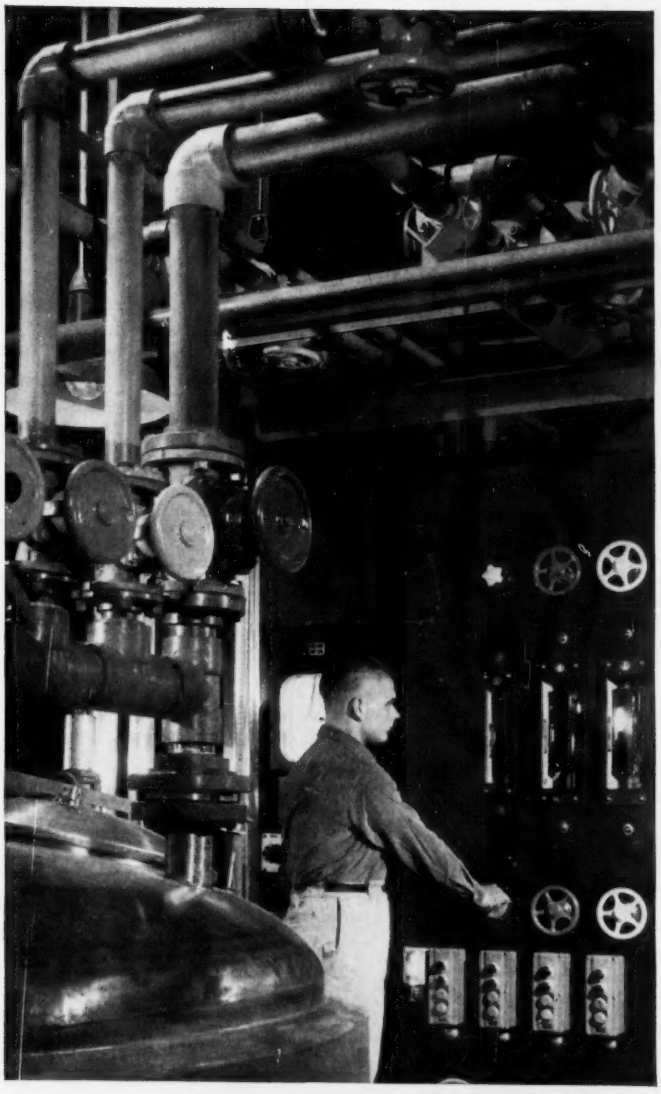

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- **Sulfuric acid:** Carload shipments traveling from El Dorado, Ark., and Wichita, Kan., to points in Oklahoma and Texas. Grounds: circuitous routes. FSA No. 33540.
- **Zinc metals:** Zinc (pigs, slab and spelter) and zinc anodes moving from origins in Arkansas, Oklahoma and Texas to Point Pleasant, W. Va., in straight or mixed carloads. Grounds: rate maintenance on combination basis and circuitous routes. FSA No. 33-531.
- **Superphosphate:** Carloads of acid phosphate transported from Norfolk, Va., to Danville, Va. Grounds: circuitous routes through North Carolina. Asked by Atlantic Coast Line Railroad Co. FSA No. 33533.
- **Calcium carbonate:** Shipments traveling from Barberton, Fairport Harbor, Painesville and Perry, O., and Wyandotte and Ludington, Mich., to Newton Falls, N.Y. Grounds: short-line distance formula and circuitous routes. FSA No. 33497.
- **Adipic acid:** Carload quantities of material moving from Orange, Tex., and Boutte and Luling, La., to points in Illinois. Grounds: competition and circuity. FSA Nos. 33499, 33501.
- **Sulfur:** Carload quantities of crude or refined sulfur traveling from Chacahoula, La., to points in southern Illinois. Grounds: new production point, competition and circuity. FSA No. 33500.
- **Dicalcium phosphate:** Carload lots, USP or feed-grade, moving from Philadelphia to Mankato, Minn. Grounds: short-line distance formula and circuitous routing. FSA No. 33-502.
- **Potash:** Shipments of potash from Carlsbad and Loving, N.M., to specified points in Arkansas, Kansas, Missouri, Mississippi and Tennessee. Grounds: competitive rate maintenance and circuity. Asked by Atchison, Topeka & Santa Fe Railway Co. FSA No. 33503.

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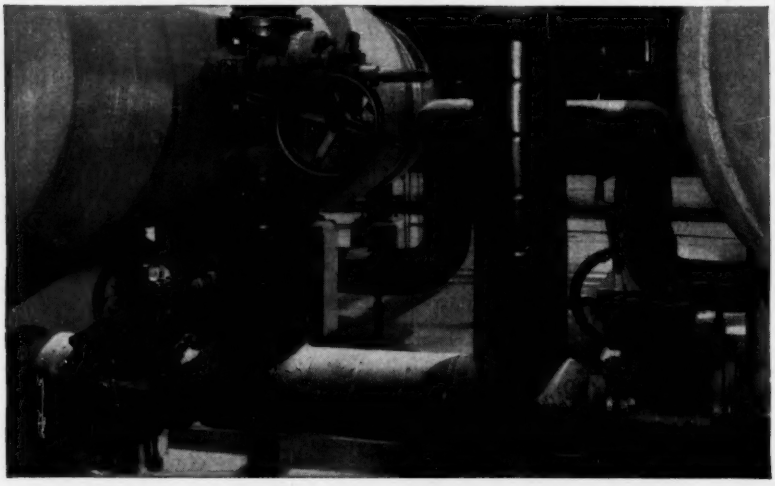

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SALES

DATA DIGEST

• **Zirconium and hafnium:** 12-p. illustrated brochure describes uses in cladding, nuclear reactors and chemical equipment. Data on alloy systems, fabrication, mechanical and physical properties included. U. S. Industrial Chemicals Co. (New York).

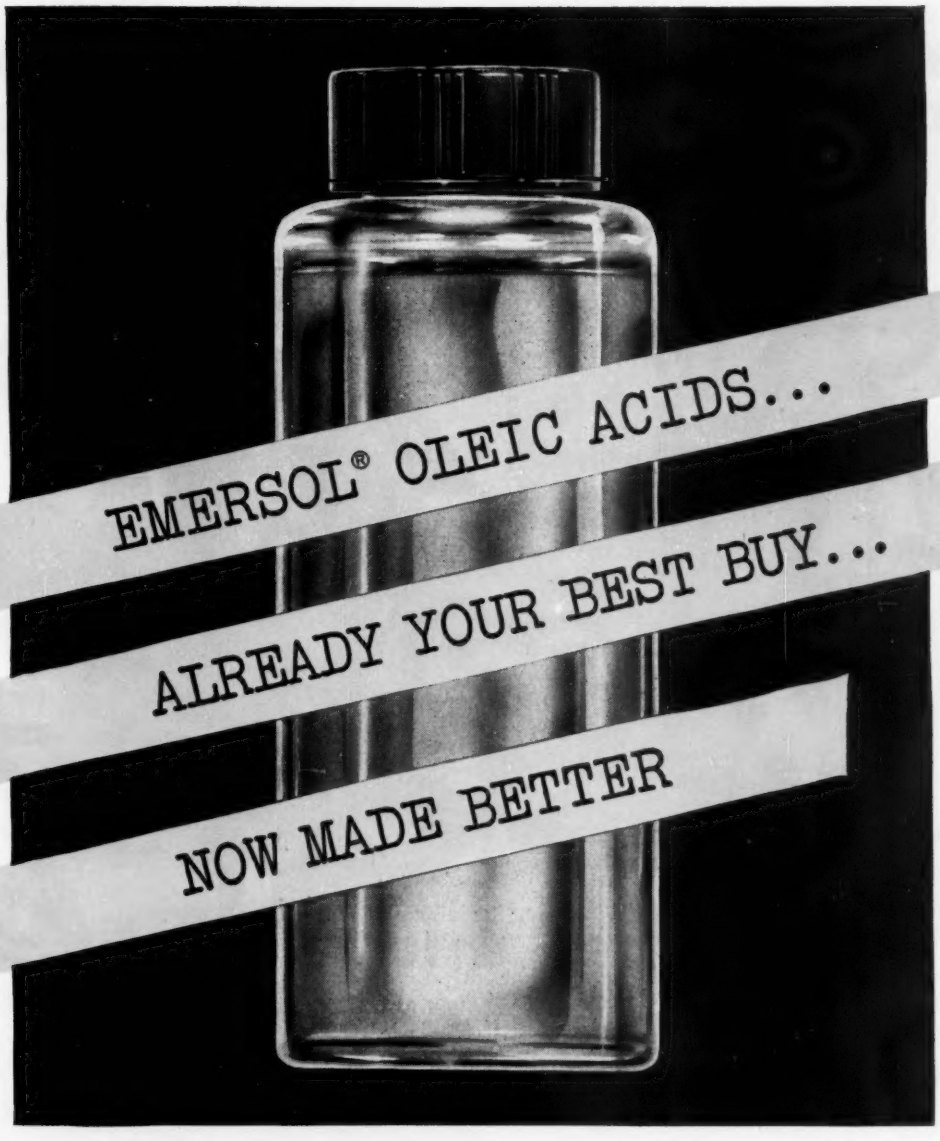
• **Surface-active agents:** New data sheets, J-200, J-300, J-400 and J-500, delineate nonionic surface-active agents, give information on physical and chemical properties, solubility, stability, wetting action, rewetting, foaming ability and compatibility. Applications are suggested in textile processing, industrial cleaning compounds, paper industry and other fields. Olin Mathieson Chemical Corp. (Baltimore).

• **Isophthalic acid alkyds:** Comprehensive brochure gives detailed specifications and property data for the Super-Beckosols. No. 1350, suggested for exterior house paints and where low viscosity, high solid resins are indicated; 1351-70, a long-oil alkyd, suggested for architectural, trim and trellis enamels; 1352-60, a medium-length oil alkyd, offered for industrial coating uses in auto finishes; 1353-50, a short-oil alkyd material, suitable for rapid-cure, baked-on auto finishes. Reichhold Chemicals, Inc. (White Plains, N. Y.).

• **Drill muds:** 10-p. brochure describes DMS-DME mud systems, a formulation of nonionic surfactant, defoamant and nonionic emulsifier. Advantages, method of preparation, precautions, tests and temperature tolerance data are given. Baroid Division, National Lead Co. (Houston).

• **Silicon:** 20-p. monograph contains information on the relationship of silicon and properties to the electronics industry. Covered: rectifiers, solar batteries, transistors, vacuum tubes, semiconductors, molecular structure, hole-electron equilibria, the diffusion process and fabrication. Aries Laboratories, Inc. (New York).

• **Chemical coatings:** Folder contains five data sheets on use of plastisols for insulation (No. 1); proofing fabrics (No. 2); decorative and protective coatings (No. 3); dipped wire goods and other equipment (No. 4); and slush and rotation molding (No. 5). Other literature describes company products in the lacquer, vinyl, enamel and synthetics fields. Stanley Chemical Co. (East Berlin, Conn.).



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*DuPont's trademark for its polyester fiber.

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Mechanical Goods Division

United States Rubber

Technology
Newsletter

CHEMICAL WEEK
April 27, 1957

Kennecott Copper will start to pilot-plant a process for recovering the sulfur and iron values from tailings at its huge Arthur and Magna copper concentrators in Utah. It will test a flotation process to separate pyritic materials from the tailings.

The pyrites would then be burned to sulfur dioxide and sponge iron. The iron would be used in its leach precipitation plant to recover copper from water, which is run over waste rock from the big open pit copper mine. The iron would replace de-tinned tin cans now used for this purpose. (Kennecott recovers many "millions of pounds" of copper in this way every year.)

Sponge iron has made the grade: the Russians now claim to have invented a way to make it. Scientists at the chemical laboratory of the Oil Institute of the U.S.S.R. Academy of Science report they have developed a process for making sponge iron by reducing iron oxide with methane. The methane is converted into carbon dioxide and hydrogen, which can then be recovered.

The reaction is carried out in a tall cylinder. Finely pulverized iron ore is swept through in an up-draft of gas. To react with one kilogram of sponge iron (2.2 lbs.), 0.15 cu. meters (53 cu. ft.) of methane are required.

The Russians say they are going to build a plant that will exploit the process, which, they say, will cost only half as much as a comparable blast furnace.

•

Montecatini will be in "commercial" polypropylene production next month. Some salient characteristics of the new material: It has a specific gravity of 0.90; withstands temperatures up to 160 C. The material, tradenamed Moplen, can be extruded, rolled or shaped.

Esso's continuing interest in olefin polymerization, meanwhile, is pointed up in a recent Australian patent application (22,101/56). It describes a polyproylene process utilizing a catalyst made by mixing an aluminum trialkyl with a reducible compound of titanium. The polymerization reaction is carried out in the presence of an inert liquid diluent.

It's official now: Davison will supply polyolefin catalyst for Phillips process licensees. It had been thought for some time (*CW Technology Newsletter, Oct. 1, '55*) that some rights to catalyst manufacture would be included in the licensing arrangements under which W. R. Grace & Co. would make polyethylene. Davison (now integrated as a Grace division) reveals it has been in pilot production of the catalyst, will start to make it on a commercial scale this year. The new unit is under con-

struction at Cincinnati, adjacent to the plant where Davison makes catalysts for petroleum cat-cracking.

•

Can irradiated coal be used as a liquid fuel additive? The Denver & Rio Grande Western Railroad has such a project in the works. D & RGW's research labs in Denver have been adding finely ground, irradiated coal to diesel oil and testing the mixture in a small (5 hp.) White diesel engine. Full-scale tests using a locomotive engine are now planned.

In preparing the experimental fuel, coal is first crushed to 200 mesh. It's then sent to Brookhaven National Laboratory where it's exposed to waste fission products. This splits it up into micron-size particles. Up to 5% low-ash coal can be added to diesel oil so as to boost its Btu. content.

•

Can amino acids retard growth? Yes. Adding methionine and phenylalanine to the diet can actually retard growth—if the acids aren't balanced with the proper amounts of at least four other amino acids. This surprising result was turned up by researchers at the University of Wisconsin. They found that the two amino acids not only did not increase growth but that they actually retarded it when added to the diet by themselves. When histidine, leucine, isoleucine and valine were added along with them, however, growth was stimulated considerably.

•

Chicks may replace monkeys in testing Salk vaccine potency. Eugene A. Tim, a Parke, Davis virologist told a meeting of the American Assn. for Immunologists in Chicago last week that the use of chicks allows "an accurate measure of the vaccine's potency, places potency on a quantitative rather than a qualitative basis, and greatly reduces chance of error." He also pointed out that additional studies now in pr ess on use of chicks indicate it may be possible to lessen the 21-day pe d now required for potency tests.

•

The world's first heavy ion linear accelerator made its bow this week. The machine, nicknamed the Hilac, was introduced to the public at a Washington press conference. It allows acceleration of ions of such elements as neon and argon.

The $1.6-million machine, located at the University of California radiation laboratory, will enable Nobel prize winner Glenn Seaborg and his colleagues to investigate five new fields of research: (1) production of new transuranium elements—from number 102 (eka-ytterbium) on, (2) production of new, short-lived isotopes throughout the periodic table, (3) production of new nuclear reactions, (4) "nuclear spectroscopy"—the study of coulomb excitation between heavy ions and various nuclei, and (5) study of range-energy curves of heavy ions and their adsorption in matter—a point of particular help in interpreting cosmic ray data.

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Of the various tests to which Dow quality control men subject Methocel®, a most important one involves a tube. The answers it gives assure complete uniformity of this Dow methylcellulose.

As Methocel is being processed, our technicians run batch samples through a capillary-type tube of the Ubbeholde Viscometer. Too fast? Too slow? (Too thick or thin?)

Rate of flow through the tube provides a simple-but-exacting test. And every Methocel grade (of which there are three in nine viscosities) must pass "Summa Cum Laude".

Of course, consistency is an inherent advantage of Methocel, for it's a *synthetic* gum. Thus, by exercising the proper controls and techniques in production, quality never varies. Result: In all types of products—from paint to shampoo—Methocel offers an unusual degree of viscosity control.

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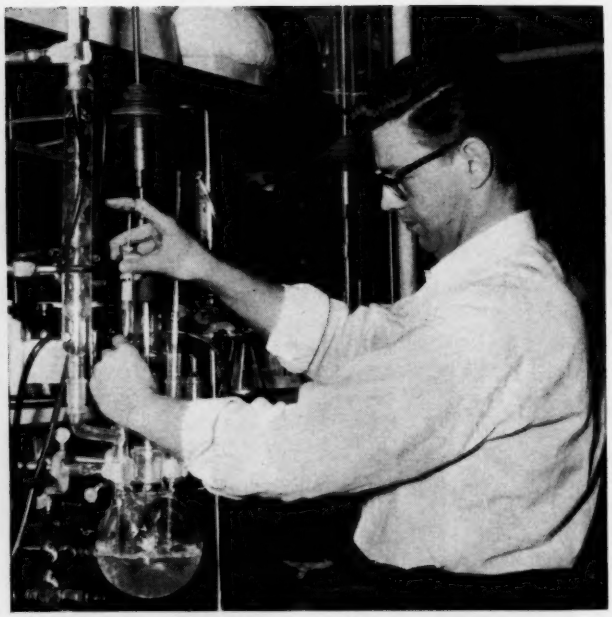
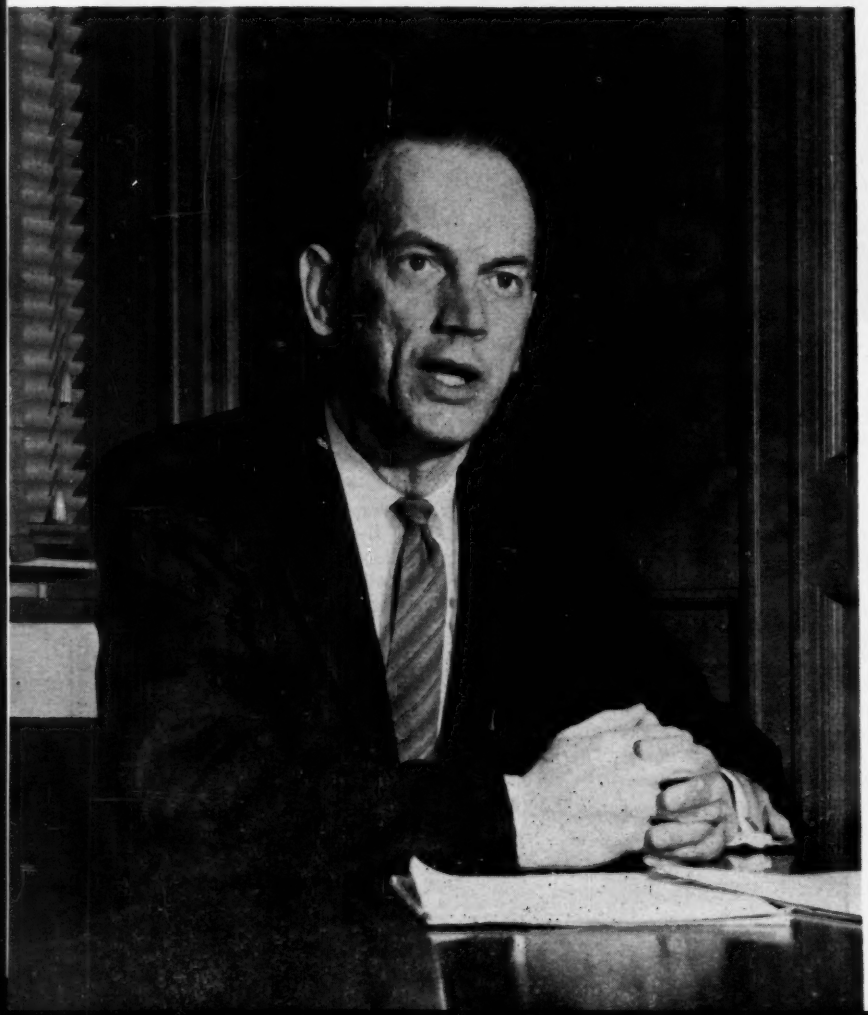
RESEARCH



NATIONAL ANILINE RESEARCHERS test trial coatings (left), prepare new urethane prepolymers.



Urethane

Urethane coatings, except in a few uses, such as solderable wire insulation (*CW, May 5, '56, p. 60*), haven't enjoyed much commercial success in the U.S. That's not only because they have been toxic and awkward to apply, but also because of their tendency to yellow with age.

Now, thanks to research, the outlook for such markets in the U.S. is brighter. Tougher, more color-stable coatings are bidding for uses on metals, plastics, wood, leather, etc.—and are heading into competition with alkyds, epoxies and spar varnish.

What's Been Done: One springboard for this resurgence is the Buffalo, N.Y., isocyanate application research laboratory of Allied Chemical's National Aniline Division. The lab, managed by Maurice Bailey, has turned up a key ingredient (methyl diethanolamine) for staving off yellowing, worked out a castor oil-diisocyanate

LAB MANAGER BAILEY: From infrared analysis, chemical keys to coating performance.

FIELD TESTS of coatings on dye plant press box (left) and drying tray help test practicability.

Coatings Come Out of the Lab

coating that may compete with spar varnish in application on boats. What's more, the lab has come up with other chemical keys to better coating performance.

Like other urethanes*, the coatings are elastomers formed by reaction of an isocyanate and a polyol. They are formulated as two-component systems (e.g., a prepolymer of tolylene diisocyanate and castor oil as one component, methyl diethanolamine catalyst and xylene solvent as the other) or in a one-component system that requires baking.

Unlike urethane foams, however, the coatings must be formulated to preclude formation of gases that interfere with the finish. Water, used in making foams, is excluded from coating formulations. Water reacts with the isocyanate to yield carbon dioxide. In coatings, amines may be used instead to catalyze and participate in the reaction.

Water can be a friend to the coatings as well as a foe, Bailey and his group have found. When coatings are applied —they can be brushed, sprayed or dipped—higher humidities expedite curing. Using a polymerized rosin catalyzed MDI (diphenyl methane-4,4′-diisocyanate)-castor oil composition, Bailey, group leader Gilbert Toone (*in photo, above right*) and chemists W. Szukiewicz and J. Hull, charted reaction rates at 80 F, 20% and 34% relative humidity, found the higher humidity cut curing time from more than 30 hours to about 20 hours. Bailey now believes a medium relative humidity is preferred for air-dried coatings.

Controls on Cure: To determine curing progress, the researchers utilized infrared analysis of the coating at various time intervals.

Bailey has turned this technique to benefit in researching toward better catalysts, too. Recently, he studied the reaction between MDI and castor oil as catalyzed by N-methyl morpholine, by N,N-dimethyl ethanolamine, by N,N-diethyl cyclohexylamine, and by triethylamine, and found their activity increased considerably in that order.

This project also proved that the physical appearance—e.g., tackiness and hardness—of a polyurethane coating isn't a sound criterion as to its degree of cure. Certain urethane coatings, Bailey finds, that appear to be completely cured can be far from completely reacted, chemically. And that's important in setting up recommended curing times and coating conditions.

Incompletely cured coatings don't yield the toughness and chemical resistance that should be expected of them. Properly cured urethanes can stand up to dilute caustic and 50% sulfuric acid, boast high impact resistance and resistance to wear.

Right Proportions: Another National Aniline study that is paying dividends in superior coatings is one that proved that castor oil (whose chief constituent is ricinolein, the glyceride of ricinoleic acid) is ideal for coating formulation when used in an exact ratio of one mol to six equivalents (three mols) of diisocyanate. A castor oil coating formulated with a methyl diethanolamine catalyst is reportedly superior for use on boats to spar varnish (by virtue of better resist-

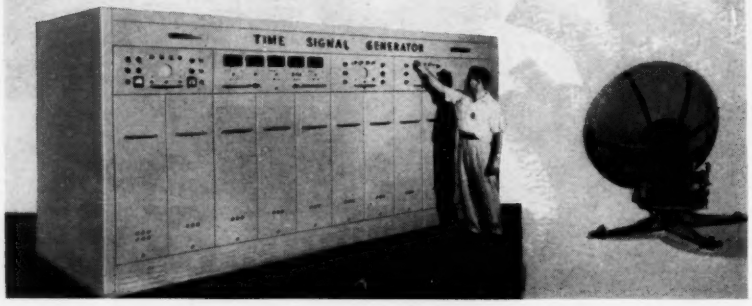
* Also known as polyurethanes, polyolurethanes, etc. The term "urethanes" is recommended by the Society of the Plastics Industry.

time: 1/10,000 of a second

Wedding time to space and velocity is a neat exercise for the armchair strategist, but it's a real-life problem for the modern weaponeer. To develop effective weapons control systems, he must know the *exact* location of projectiles in time and space.

Vitro Laboratories solved this problem by developing the Time Signal Generator—illustrated here—as the heart of a range control system accurate to 1/10,000th of a second in locating projectiles in time from known positions in space.

Vitro's unique experience in electronic and electromechanical equipment includes the development of complete missile launching and range control systems. Its resultant experience in data processing and metric electronics, in operations and mathematical analysis, and in product development and engineering, can make Vitro Laboratories a valuable member of your research and development team. Or, it can take over complete electronic or electromechanical research and development for groups whose major interests lie in related fields.



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- Aircraft components and ordnance systems
- Ceramic colors, pigments, and chemicals

ance to salt water). It also might find application as an exterior paint for homes.

At the National Aniline dyestuff plant, near the laboratory, coatings of this nature have been tried on press boxes (used to transport the moist filter press cake) as well as on filter press frames, floors, and equipment. The results are highly satisfactory, according to plant maintenance men. (Competitive coatings don't last as long on the press boxes, for example, because the dye batches vary from acid to alkaline, a condition the urethanes are uniquely fitted to cope with.) Moreover, the urethane coating can withstand the pounding sometimes required to dislodge the cake.

All for Sales: Despite its success with the castor oil, National Aniline is also interested in polyesters for coating formulations, particularly for wire enamel*. As an isocyanate supplier—not a coating formulator—the company is interested primarily in expanding isocyanate uses. Its application research is aimed at that objective. Another major isocyanate supplier, Mobay, sells both the isocyanate and polyester in its new coating system offered as corrosion barrier and for other specialized uses. Du Pont, like National Aniline, confines itself to selling (and application researching) the isocyanates. It also sells adipic acid that may be used in polyester production.

Meanwhile, there are still problems to be solved in the urethane coating field. The question of toxicity of a coating formula that stems from the isocyanate component has been sidestepped to some degree by prepolymerizing. But care and ventilation are still highly essential when applying a urethane. And there's still no way 'round the need for a two-component system for air-dried coatings. Too, pigmentation of a two-component system is practicable—if the components are kept separate until the day they are applied in combination. High costs, moreover, are likely to keep urethane coatings out of fields other than industrial use for some time to come.

Still, in its field, the urethane coating is already an entity to be reckoned with. More research (and a lower applied-basis price) could make it a major coating competitor.

* Another Allied division, Barrett, makes the linear polyesters needed for urethanes.

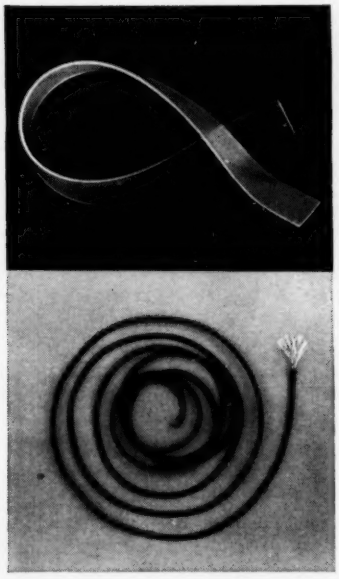
FYI

FOR YOUR INFORMATION

Allied Chemical

DIVISIONS: Barrett, General Chemical, National Aniline, Nitrogen, Semet-Solvay, Solvay Process, International

- *nylon milk bottles*
- *farming fish*
- *paper coating*



Nylon milk bottles

When you're looking to laboratory-stage plastics for new developments, it is somewhat startling to realize that a new raw material has come from one of the better established plastics, nylon.

For nylon—first a synthetic fiber and more recently a new molding compound—is now extrudable as well. The extrusion industry can, for the first time, utilize PLASKON nylon with standard equipment and standard techniques.

The import of this development is underlined by the products made possible. Tough, transparent milk bottles and packaging films. Strong, sterilizable baby bottles and aerosol bombs. Flexible, high-burst-strength lubricating systems and speedometer cables. Abrasion-resistant wire covering and automotive scuff pads.

A 5 mil extruded sheet, for example, is remarkably tough and transparent. Other impressive properties are high impact resistance over a wide temperature range, good chemical resistance, ease of colorability with a penetrating dye or by pigmentation of pellets.

Several grades of PLASKON nylon – polycaprolactam-type – generally known as "nylon 6" — are available for extrusion: PLASKON 8201 for general purpose extrusion; a heat-stabilized form for high temperature and wire covering applications; special high viscosity and flexible grades.

Farming fish

We were going to say, "Don't forget to give your fish their fertilizer this year."

What we mean is this: don't forget to give your algae their fertilizer this year. Well-fertilized algae make better meals for plankton, which make better food for insects, upon which feed small fish, which in turn end up on the menus of large fish.

You can improve fishing within a single year by applying plant food to ponds. Fish in fertilized ponds can become five times larger, both fatter and longer.

Applying the fertilizer is almost as easy as pulling the fish out on the end of a line. You can either spread it from the side of a boat or, on larger ponds, use the newest techniques of aerial application. Free-flowing ARCADIAN fertilizers can be quickly and easily spread on a pond by conventional dusting planes.

The best fertilizers for fish ponds have a high nitrogen analysis. Their nitrogen-phosphorus-potash (N-P-K) ratio should be at least 2-2-1 or 1-1-1. Like ARCADIAN 12-12-12.

PLASKON and ARCADIAN are Allied Chemical trademarks.

Paper coating

A key problem in coating paper on today's fast machine coaters is viscosity control. The aim: to increase total solids content (for better coating) without increasing viscosity.

Experimental data prepared by the Nitrogen Division research group indicate that small amounts of urea give large viscosity reductions and drastically lower the rate of viscosity increase on standing. Urea also lowers thixotropic index and permits use of adhesive dispersions with higher solids content.

A paper titled "Viscosity Control of Paper Coating Adhesives" contains 15 substantiating graphs. We'd be pleased to send a copy.

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Please send me further information:

- ☐ Extruded nylon
- ☐ Fertilizing fish ponds
- ☐ Urea for viscosity control

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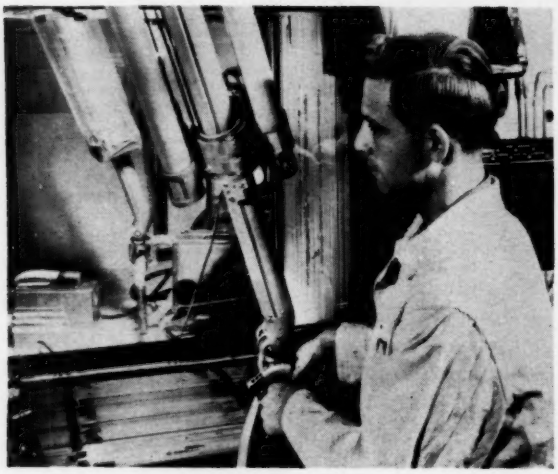
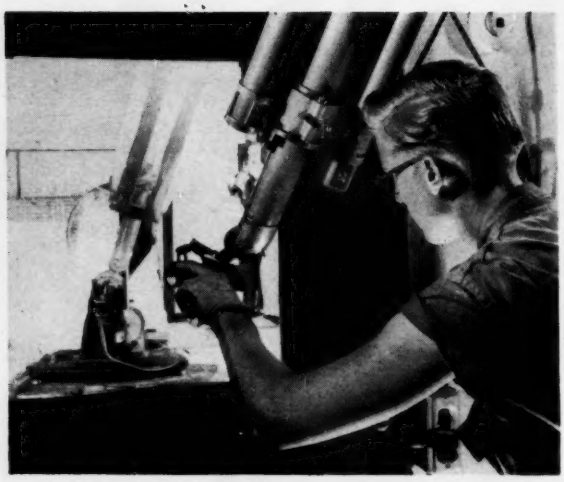
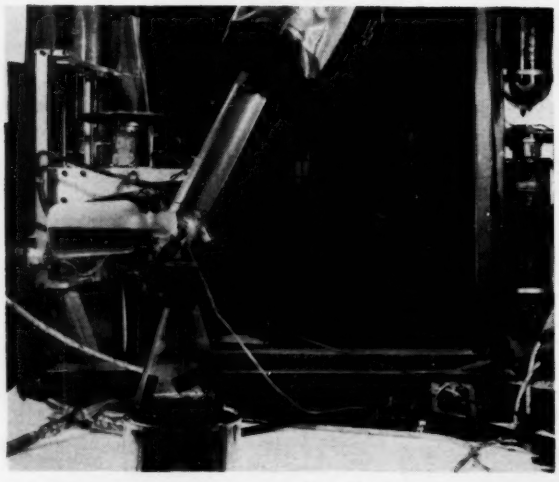


Vacuum-cleaning radioactive dust.



Impact tests on specimens.



Cleaning corrosion scale with nitric acid.

Precision weighing of 'hot' samples.

'Hot Labs' Hatch New Kind of Researcher

A comparatively new job category in the chemical process industries, that of "hot lab" technician, is becoming an increasingly important one. These scenes, typical of the trade, are from the laboratory of the Atomic Energy Commission's Bettis plant (Pittsburgh), which is operated by Westinghouse Electric Corp. They illustrate one key requirement for such technicians: adeptness at handling radioactive materials by remote control.

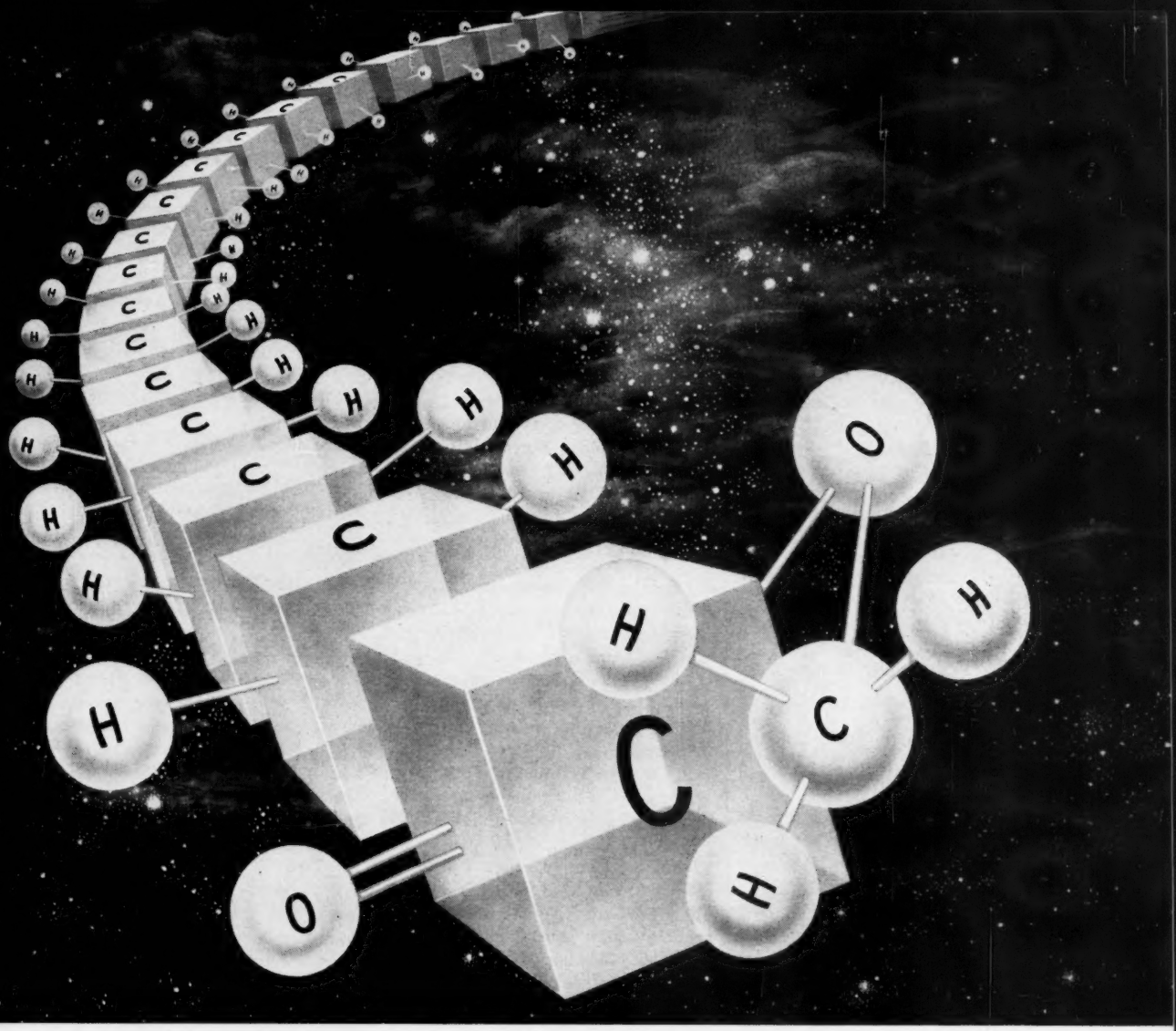
"Technician," in this business, is a catch-all term, may include Ph. D.s, engineers, or specially trained workers. According to Ray Westphal, supervisor of operations in the Bettis hot lab, it takes about six months to train a man for hot-lab work. That's the period required to become proficient at working with the mechanical hands that perform behind 3-ft. concrete walls. And, says Westphal, it takes that long for a man to get used to the procedures for protecting himself against radiation.

As a safety measure, members of the 40-man staff always work in pairs when radioactive materials are being handled. One man carries a radiation meter. All staffers wear a film badge and a dosimeter (for personal radiation monitoring) in the lab. Industrial hygiene specialists keep close tabs on radiation hazards.

At the Bettis hot lab, one of the busiest in the country, three new test cells have been constructed to permit testing samples that emit up to 1 million curies of radiation (equivalent to 2,500 lbs. of radium). The cells are made of 3-ft.-thick concrete, each has one door made of 22-in.-thick steel plate weighing over 12 tons. Technicians watch experiments through a glass window 34 in. thick.

Inside the cells, radioactive samples may be checked for hardness, tensile and impact strength, etc. When no longer useful, irradiated materials are disposed of according to AEC regulations.

Says Westphal, "Our procedures for handling radio-



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M. Palmitate—M. Stearate (Uniphat A-65)
M. Stearate—M. Palmitate (Uniphat A-76)
M. Oleate (Uniphat A-86)

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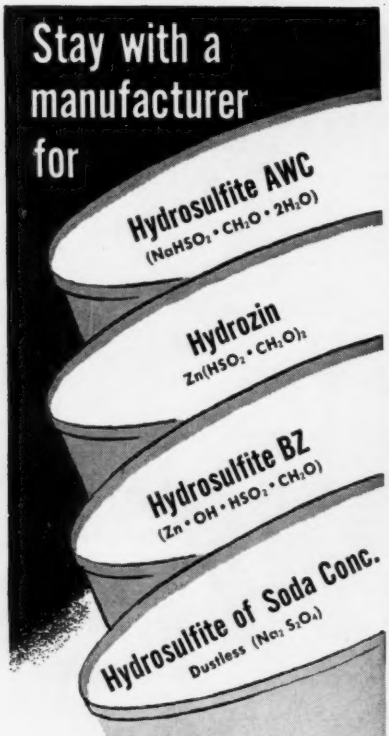

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active materials are based on one simple rule: everything in the lab is considered to be radioactive until it is proved safe by a radiation meter." That's one reason why hot-lab work is developing a new kind of technical handy man.

EXPANSION

• U. S. Rubber Co. has completed the transfer of its Passaic, N.J., central laboratories operations to its new research center at Wayne, N.J. To be dedicated this fall, the new lab will house a staff of approximately 400, stress fundamental research in rubber, plastics, textiles and chemicals.

• Warner-Chilcott Division of Warner-Lambert Pharmaceutical Co. has opened a new research building in Morris Plains, N.J. Plans are to expand and intensify research in such fields as viruses, hormones, enzymes, heart and circulation disease, mental disease, and the medical problems of ageing.

• Carnegie Institute of Technology (Pittsburgh) is planning a new engineering and science building. Cost: $2 million. The institute will spend $7 million more to improve existing facilities.

• Cobalt Development Institute has held its first general assembly in Brussels, Belgium. The recently created institute's object is to improve existing techniques of using cobalt and to develop new ones. The cobalt information center of Battelle Memorial Institute (Columbus, O.) is the U. S. representative.

PRODUCTS

Superpure Silicon: A silicon with only one part impurities in 100 million, developed by Raytheon Mfg. Co., is being used to manufacture infrared detectors that can react to rays emitted by targets of subzero temperatures.

•

Ulcer Ouster: Methyl methionine sulfonium chloride is now being manufactured by Degussa (Frankfurt, Germany) as a new drug for ulcers.

•

Rubber Accelerator: American Cyanamid Co. is out with a new special-purpose rubber accelerator, 2-mercaptothiazoline. The material, called 2-MT, reportedly imparts higher elastic modulus, increased age-resistance, retention of tensile strength and tear-resistance at high temperatures, greater resistance to flex cracking, and substantially reduced heat buildup.

•

New Organics: Biochemical researchers can now get 5-hydroxymethyluracil from Chemicals Procurement Co. (New York). CPC says a new method of preparing the chemical permits both economical and volume production.

• Ames Laboratories, Inc. (South Norwalk, Conn.), has added some substituted benzylamines (e.g., *o*-chlorobenzylamine, *m*-methylbenzylamine) and isomerically pure amylamines (n-amylamine, 3-methylbutylamine and 2-methylbutylamine) to its line.

APPARATUS

Portable Balance: The Electrobalance, a new portable-type balance is being produced by Cahn Instrument Co. and distributed by Central Scientific Co. (Chicago). The battery-operated and vibration-resisting balance can make precision weighings in less than a minute.

•

Protection: For high-speed centrifuges, Ivan Sorvall, Inc. (Norwalk, Conn.), has developed the Servall rotor which features a cover that seals against the escape of rotor contents, provides researchers with a safeguard against the escape of infectious material.

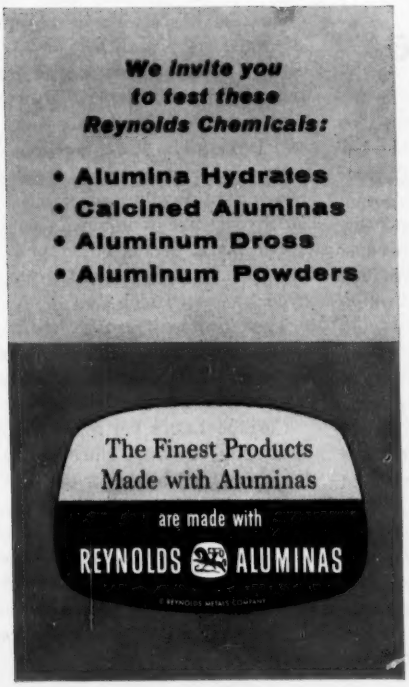
•

Molecular Models: Arthur F. Smith Co. (Rochester, N.Y.), manufacturer of high-vacuum equipment, is now exclusive U.S. distributor of Catalin molecular model sets—convenient means of representing steric structures of chemicals.

•

Thermobalance: Rutgers Newark College of Arts and Sciences (Newark, N.J.) is the recipient of a continuously recording, magnetic-transmission thermobalance made by Testut Co. (Paris, France). One of only two of its type in the world—and the only one in the U.S.—the instrument provides a continuous precise record of weight changes of materials heated to temperatures beyond 2000 F. It will be used to investigate chemical and physical effects on solids beyond 2200 F, is valued at about $4,000.

Natural or Refined Aluminas?
Measure the Difference in Dollars

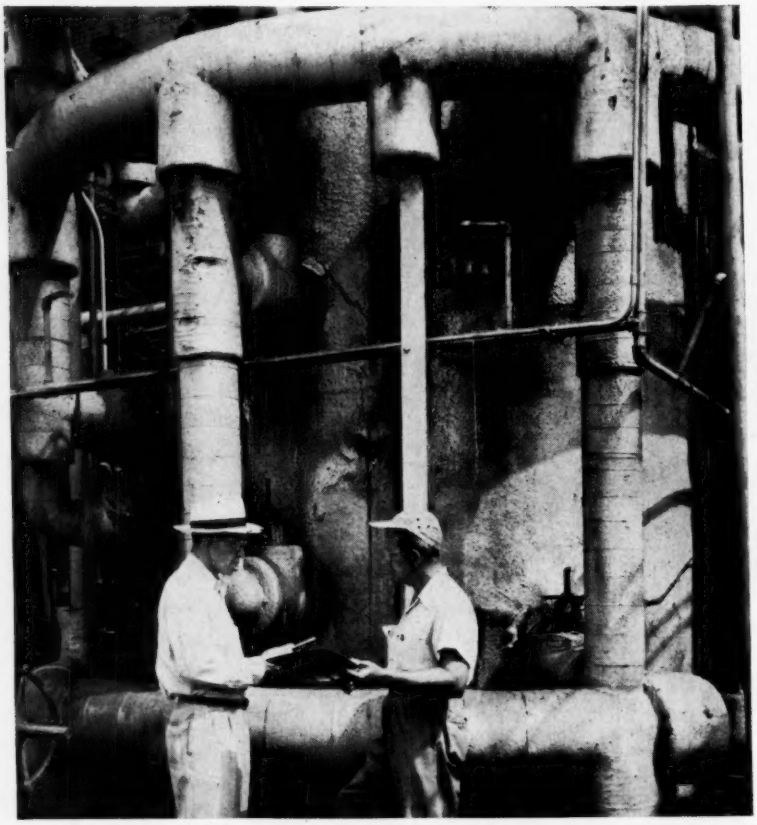


When your production requires aluminas it pays to *start* with aluminas. You eliminate refining steps in your processing. And consider the advantages of product improvement through the use of pure high quality Reynolds Aluminum Chemicals, the savings in shipment and storage. Why add contaminants?

Reynolds production and control facilities are your assurance of constant, ample supplies of highest quality aluminum chemicals. For samples and complete information call the nearest Reynolds office listed under "Aluminum" in your classified telephone directory, or write *Reynolds Metals Company, P.O. Box* 1800-CM, *Louisville 1, Kentucky.*

REYNOLDS CHEMICALS

See "CIRCUS BOY", Reynolds dramatic series, Sundays on NBC-TV



SORBIC SYNTHESIS forges 2-carbon links into 6-carbon chain. The trick . . .

Keeping the Links in Line

First clue to a commercial process used by Carbide and Carbon Chemicals at its Charleston, W. Va., plant has emerged from a British Patent (757,812). It describes how the firm makes sorbaldehyde and crotonaldehyde from acetaldehyde. As such, the process is one of the keys to the successful development of a practical commercial synthesis for sorbic acid (*CW, Aug. 13, '55, p. 73*).

As Carbide has said before, the trick in making 6-carbon atom sorbaldehyde (2, 4-hexadienal) is to keep the 2-carbon atom acetaldehyde's trimerization occurring in a straight line. The hard-to-separate products of a branched-chain trimerization put a crimp in original scale-up of its sorbic acid process. Here's why:

Early wartime research taught Carbide how to synthesize sorbic acid by air oxidation from hexadienal, a by-product of its crotonaldehyde production. But it wasn't until 1953, after Best Foods revealed that sorbic had been proved nontoxic, that Carbide got into production.

To its dismay, Carbide found that the process wouldn't work because the by-product hexadienal was too impure. The familiar route to crotonaldehyde is by alkali-catalyzed condensation of acetaldehyde to aldol, followed by acid-catalyzed cracking to crotonaldehyde. But condensation also yields higher-carbon-atom products—largely branched-chain products —and cracking gives hard-to-separate 2-vinylcrotonaldehyde.

To the Rescue: It was then that Henry Chitwood's researchers came up with a synthesis that they had started with an eye toward supplementing the limited plant quantities of by-product hexadienal. After painstaking trial and error, they hit upon a non-alkaline condensation catalyst made by reacting phosphoric acid with a heterocyclic secondary mono- or di-amine (e.g., morpholine). Preferred catalyst concentration is between 0.5 and 2% by weight of acetaldehyde —in water or alcohol solution.

Pressure Is Best: The condensation reaction can be carried out at atmospheric pressure using a reaction vessel equipped with a mechanical agitator and a reflux condenser. But condensations at pressures up to 500 psig. have several advantages: higher temperatures and minimum reaction time; no aldol is produced.

Small amounts of catalyst give only about 50% acetaldehyde condensation products. But process efficiency is higher than with larger amounts of catalyst—90-95% of the acetaldehyde reacted is converted into 4-carbon crotonaldehyde and 6-carbon sorbaldehyde. Yields of crotonaldehyde are larger than those of sorbaldehyde—ratio varies, 3:1 to 10:1, depending, among other things, on catalyst used, reaction conditions.

Separation: After the condensation has reached the desired degree of completion—generally 10-30 minutes at 80-120 C—the products are quickly separated from the catalyst to prevent further reaction. One method: continuous distillation in the presence of water.

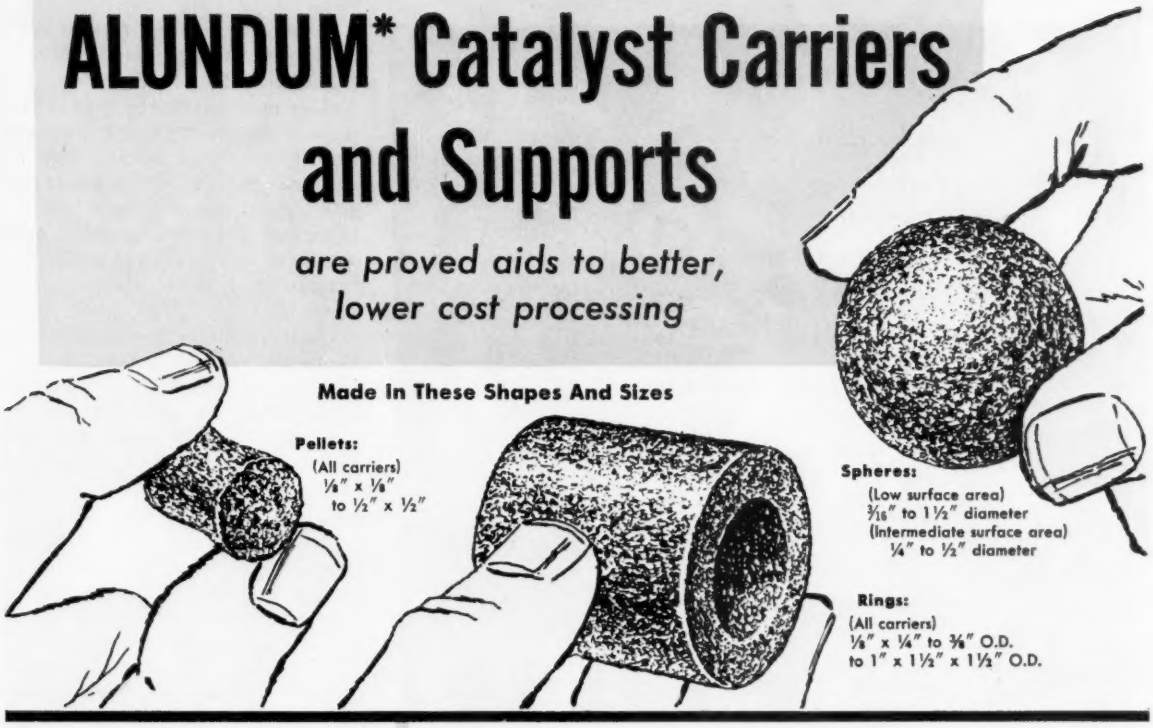
Too, excess acetaldehyde can be removed by distillation, after which the residual mixture separates into two layers. The lower aqueous layer, containing catalyst, is distilled for recovery of dissolved aldehydes. These aldehydes are combined with the upper layer, steam or vacuum fractionated for recovery of crotonaldehyde and sorbaldehyde.

The crotonaldehyde, useful for organic synthesis and as a solvent, is ready for sale; sorbaldehyde is ready for conversion into sorbic acid.

Carbide hasn't yet made plans for increasing capacity, since sorbic still faces an uphill battle for use as a food preservative. The price structure has remained static since 1955—sorbic acid at $2.45/lb. and sodium benzoate at 46¢/lb. But sorbic has two big selling points: a lot less is needed to do the job, and it is metabolized in the body.

ALUNDUM* Catalyst Carriers and Supports

are proved aids to better, lower cost processing



Made In These Shapes And Sizes

Pellets:
(All carriers)
⅛" x ⅛"
to ½" x ½"

Spheres:
(Low surface area)
3/16" to 1½" diameter
(Intermediate surface area)
¼" to ½" diameter

Rings:
(All carriers)
⅛" x ¼" to ⅜" O.D.
to 1" x 1½" x 1½" O.D.

Norton ALUNDUM catalyst carriers have excellent mechanical, thermal and chemical stability. They are crystalline in nature and are produced in two surface area types: Intermediate (5-70m²/gram) and Low (less than 1m²/gram).

The alumina content of the intermediate carriers is approximately 77%. These are subdivided into Types A, B and C, with varying characteristics. In the low surface area carriers, the alumina content ranges from 77% to 92%.

PHYSICAL PROPERTIES

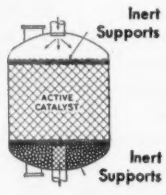
	Apparent Porosity	Water Absorption	Bulk Density	Vol. Bulk Density	Crystal Structure	Surface Area
Intermediate Surface Area Type A	45-50%	28-30%	1.65-1.70 gr/cc	58 lbs/ft³ (Approx.)	Quartz, Alpha, Gamma Alumina — chiefly Gamma Alumina	60-70m²/gram
Type B	45-50%	28-30%	1.65-1.70 gr/cc	60 lbs/ft³ (Approx.)	Quartz, Alpha, Kappa, Delta Alumina	20-30m²/gram
Type C	45-50%	28-30%	1.65-1.70 gr/cc	62 lbs/ft³ (Approx.)	Alpha Alumina and Mullite	5-10m²/gram
Low Surface Area	10-50%	3-25%	1.90-3.15 gr/cc	65-80 lbs/ft³	Alpha Alumina and Mullite	Less than 1m²/gram

Some Of Many Applications

Suggested Applications For Intermediate Surface Carriers include catalytic reforming, dehydrogenation, dehydration, sulfuric acid manufacture, nitric acid manufacture and dessicants.

Low Surface Area Carriers are used in the processing of phthalic anhydride, maleic anhydride and ethylene oxide; also in protective atmospheres and synthetic gas generation.

Suspending Active Catalysts Effectively



In fixed bed convertors where it is necessary to suspend active catalysts at a given level, supports produced by Norton are used successfully. Made of dense, rugged, electrically fused materials these supports have great resistance to breakdown and have no chemically reactive effect on the processing.

Get More Facts

on how Norton catalyst carriers and supports can improve and economize your processing. On request, they can be prepared from other materials such as: CRYSTOLON* silicon carbide, MAGNORITE* fused magnesia, zirconium oxide, silica, etc. Call in your Norton Refractories Engineer or write, mentioning your requirements, to NORTON COMPANY, Refractories Division, 563 New Bond St., Worcester 6, Massachusetts.

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Behr-cat Tapes
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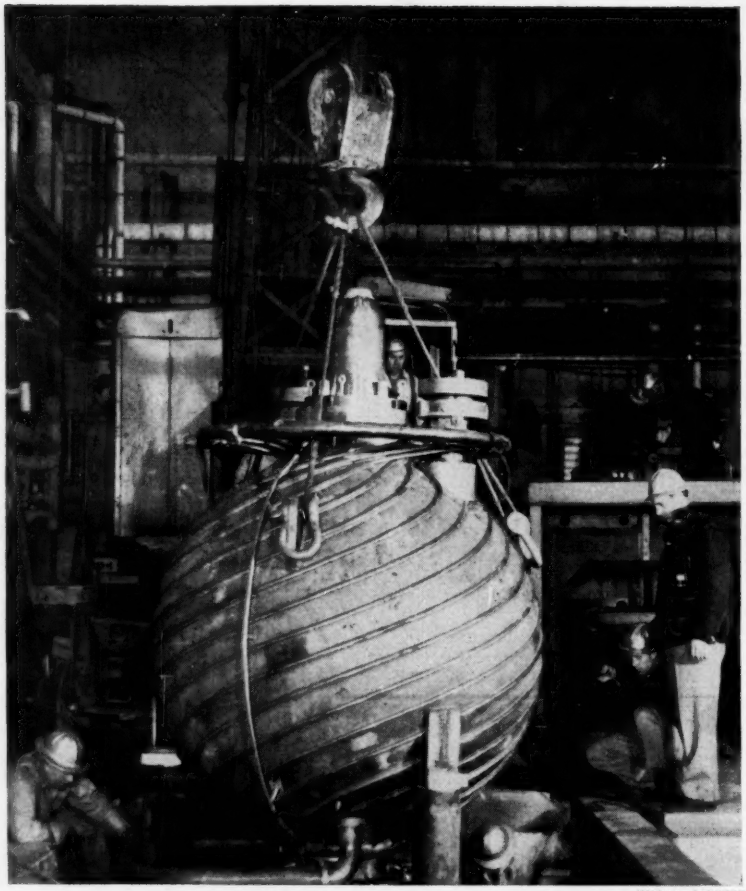


UNION CARBIDE

HOMOGENEOUS REACTOR holds important key to thorium's role in . . .

Nuclear Power's Prospects

A group of 25 representatives of the uranium mining and allied industries embarked last fortnight on a flying tour of eastern United States AEC installations and Canadian mining operations sponsored by the Uranium Institute of America (Grand Junction, Colo.). Their goal: a first-hand view of nuclear processing facilities and an opportunity to discuss with atomic energy planners some of the new systerms under development. Some of the conclusions they have drawn from the planners' guarded predictions of uranium's future:

- Uranium demand should be generally good for the next 50 years, but may not hit full stride until the '80s, when a significant number of fast reactors will be employed for commercial nuclear power.
- Thorium is slated for a prominent supporting role, may do better than uranium in the next 25 years. Though it still presents difficult recovery and processing problems, thorium is the best fuel for thermal reactors, which will likely be most widely used in the next few years.
- Already commercial in foreign countries where fossil fuels are scarce, nuclear power is a big factor in international relations. With further lowering of restrictions on nuclear exports, U.S. producers of nuclear fuel and equipment would have a ready market on which to build for future domestic needs.

Power Growth: First stop on the tour was Argonne National Laboratory (Lemont, Ill.), where Stuart McLain, associate director of ANL, outlined the laboratory's development program, sized up uranium's (and thorium's) likely contribution to the nation's growing power needs.

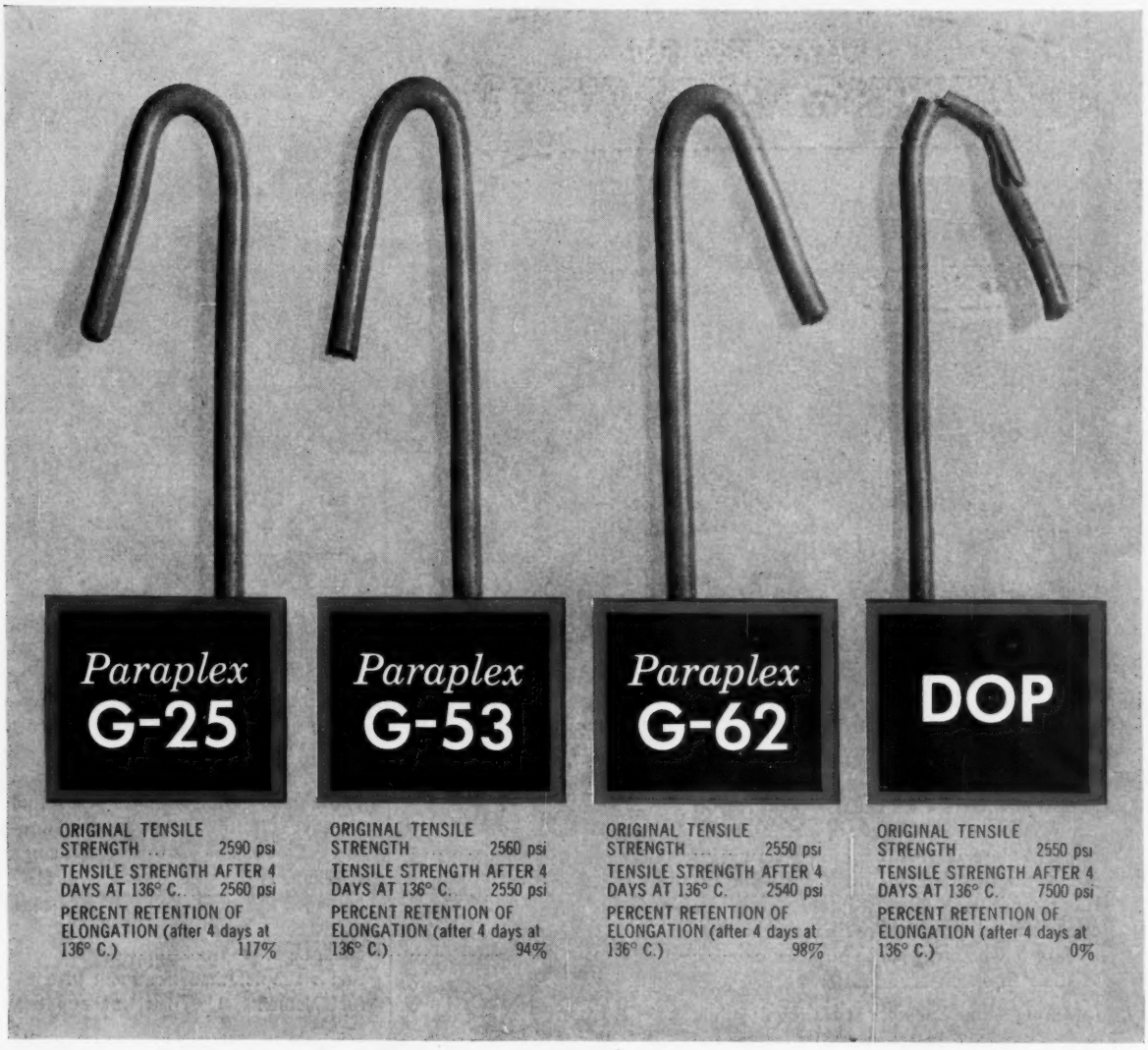
Pointing to the fossil fuels' inability to keep up with the annual 8% increase in U.S. power consumption, McLain predicted that by 1965 at least some of the country's new generating capacity will have to be fueled by uranium, that by 1970 most new power plants will be nuclear facilities. In the next few years, he added, most nuclear power plants will be thermal reactors. And that's where thorium comes in.

The thorium-U_{233} system is the best one for thermal reactors, said McLain. And though thorium is generally scarce at any one place, it's actually about four times as plentiful as uranium. Aside from the obvious disadvantages of recovering thorium from low-grade sources, it does afford one big processing advantage: thorium-U_{233} is amenable to chemical separation, facilities for which might reasonably be expected to cost no more than $25 million. (Facilities for the isotopic separation of U_{235} from U_{238} require a minimum investment of $500 million.) ANL is now installing equipment in a thorium separation plant, will soon begin development of processing techniques for handling these hazardous alpha-emitting materials.

Since there's little advantage to the use of thorium in fast reactors, uranium's future will be determined largely by the success of systems of this type. Eventually, McLain predicted, most fission reactors will be fast. His long-term guess: by the year 2000, nuclear materials in breeder reactors and blankets alone will require five times more than the total amount of uranium in use today. Marketability of uranium should be good for the next 50 years, said McLain, beyond that we can't predict.

Oak Ridge Echoes: Hopping from Chicago to St. Louis, the UIA group toured AEC's abuilding feed material plant, which Mallinckrodt will operate at Weldon Spring, Mo. Next stop: Oak Ridge National Laboratory, where they heard Robert Charpie, youthful assistant research director of ORNL, explain some of the pending developments—and some of the still unsolved problems—that will be deciding factors in nuclear power's commercial growth.

Though atomic energy has already assumed commercial importance in foreign countries where fossil fuels are


Paraplex G-25
ORIGINAL TENSILE STRENGTH ... 2590 psi
TENSILE STRENGTH AFTER 4 DAYS AT 136° C. 2560 psi
PERCENT RETENTION OF ELONGATION (after 4 days at 136° C.) 117%
Paraplex G-53
ORIGINAL TENSILE STRENGTH ... 2560 psi
TENSILE STRENGTH AFTER 4 DAYS AT 136° C. 2550 psi
PERCENT RETENTION OF ELONGATION (after 4 days at 136° C.) 94%
Paraplex G-62
ORIGINAL TENSILE STRENGTH ... 2550 psi
TENSILE STRENGTH AFTER 4 DAYS AT 136° C. 2540 psi
PERCENT RETENTION OF ELONGATION (after 4 days at 136° C.) 98%
DOP
ORIGINAL TENSILE STRENGTH 2550 psi
TENSILE STRENGTH AFTER 4 DAYS AT 136° C. 7500 psi
PERCENT RETENTION OF ELONGATION (after 4 days at 136° C.) 0%

Flexing tests help you pick a plasticizer for high temperature wire insulation

If you make high-temperature wire insulation, the plasticizer is of No. 1 concern to you. The four specimens above demonstrate clearly the advantages of using PARAPLEX plasticizers for electrical insulation requiring retention of physical properties at high temperatures, as well as for non-electrical applications, such as automotive, where exposure to heat is involved in service. Notice how convincingly the samples made with PARAPLEX G-25, PARAPLEX G-53, and PARAPLEX G-62 survive a 360° bending test after aging 4 days at 136°C.; compare them with the insulation plasticized with dioctyl phthalate.

Rohm & Haas PARAPLEX polymeric plasticizers give excellent performance not only in high-temperature uses but also in general applications because of their resistance to migration, stability against heat or light, very low volatility, resistance to extraction by a variety of organic and aqueous solvents, and good electrical properties.

For more information on all Rohm & Haas plasticizers, write for *What You Should Know About* PARAPLEX *and* MONOPLEX *Plasticizers.*

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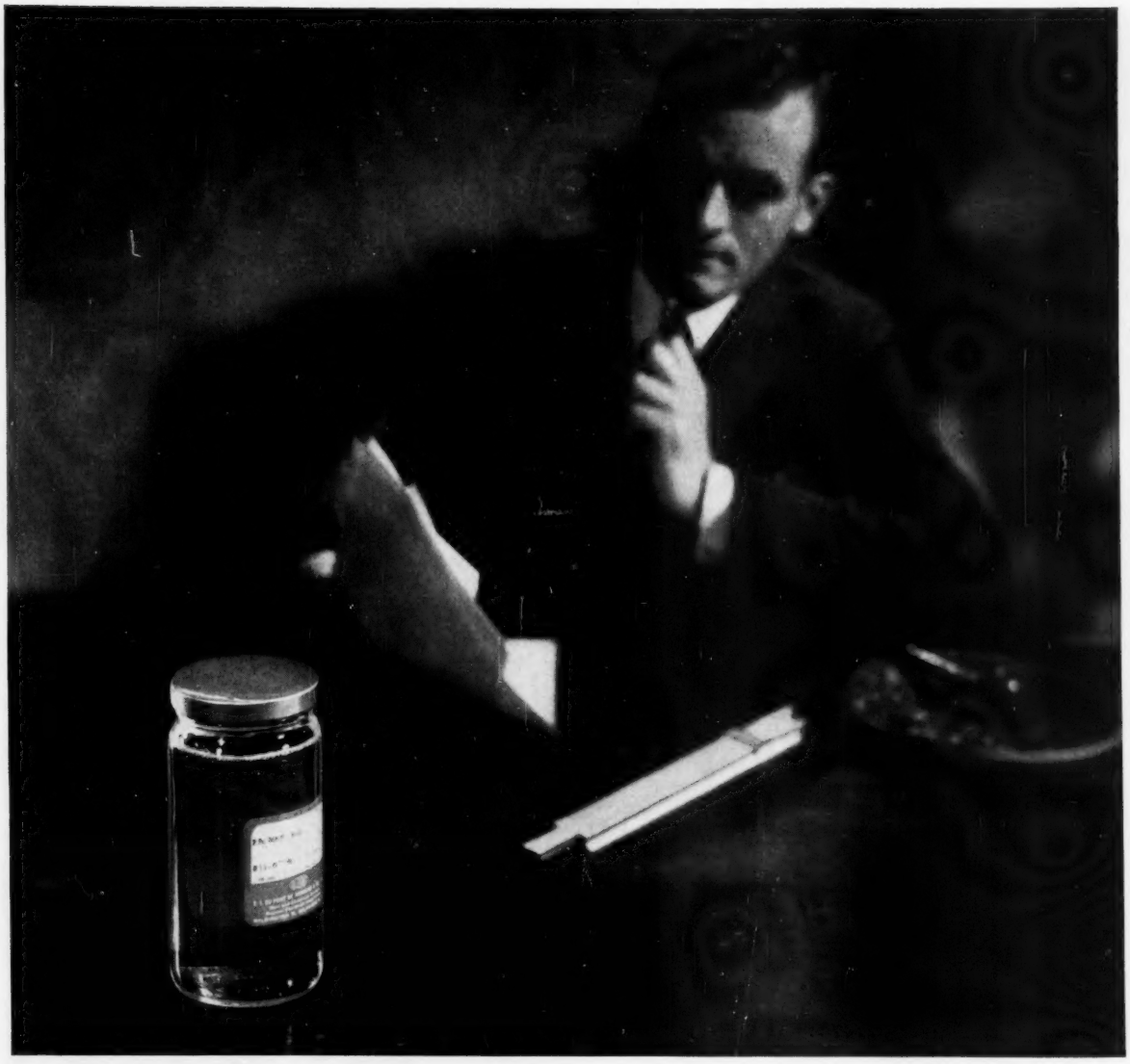
scarce, said Charpie, the U.S. doesn't need it very badly at the present time. Between now and 1980, the biggest power demands will be met with coal. However, said Charpie, nuclear economy will grow as fast as nuclear technology is "invented." His best guess: it will be sometime around 1985 before 50% of the nation's incremental power installations will be nuclear.

Echoing earlier comments on thorium, Charpie pointed out that thorium and uranium are complementary, require completely different reactor systems and fuel cycles. That thorium will have its day in court is not a question of "if", but of "when", said Charpie. There's more money to be made in thorium in the next 25 years than in uranium.

Reactor Is the Key: Just how soon thorium will assume commercial importance depends largely on how soon nuclear engineers can solve the extremely difficult problems encountered in homogeneous operation. The homogeneous reactor is—in theory, at least —one of the simplest to construct and operate. Essentially, it's a pot, a pump and a pipe—with the fuel (uranyl sulfate in heavy water) doubling as coolant and heat exchange medium. A slurry of thorium in D_2O blankets the core, captures neutrons that convert thorium into U_{233}. Second advantage: reprocessing of aqueous fuel is simpler than treatment of solid fuel elements; U_{233} fuel makeup can be separated from the thorium blanket by chemical means.

The system's biggest disadvantage: wear and tear on materials of construction. Uranyl sulfate is extremely corrosive; thorium slurry damages reactor components by erosion.

Thorium Plenty: After a round of meetings with members of the joint Congressional committee on atomic energy and AEC officials on the fourth day of the tour, the UIA group flew to Blind River, Canada, for a look at Rio Tinto's Algom Nordic mine. Here, too, interest in thorium was very much in evidence. Reason: the Rio Tinto properties hold large quantities of low-grade thorium, presently being dumped as waste from uranium recovery. But Rio Tinto officials disclosed that thorium figures in the company's plans for the future, may include a joint operation with some other company already established in that field.



Somewhere there's a chemist who will find what this unusual surfactant was made for

This researcher isn't going to turn flip-flops about Du Pont offering him a new chemical—Product BCO.

"But, what is there," he'll ask himself, "about *this* surfactant from Du Pont that makes it so unusual?"

The answer: it's *amphoteric*. Our chemist will know the word. He'll know that this surface active agent will go into solution as either an electro-positive or an electro-negative—depending on the solution. He'll know it can be used in either acidic or basic solutions; that it might be useful where the common surfactants have failed.

He may even link Product BCO with the Grecian wine jug called an *amphora* because it had two handles. He may wonder what that extra handle is good for.

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That's why we're running this advertisement. Somewhere there *is* a chemist who will find an outstanding use for Product BCO. And when he does, it will be quite a feather in his cap. Is that man you? Write us on your company letterhead. We'll gladly send that sample. E. I. du Pont de Nemours & Co. (Inc.), Organic Chemicals Department, Dyes and Chemicals Division, Wilmington 98, Delaware.

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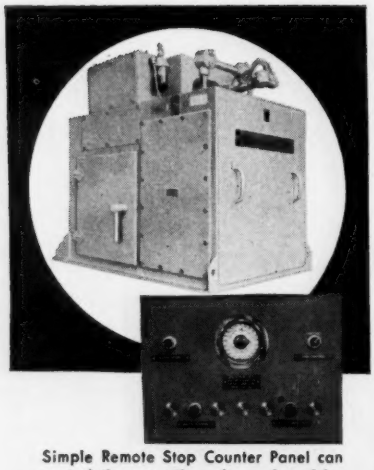

Simple Remote Stop Counter Panel can control the operation of a series of interlocked scales like the one shown above.

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Expensive and complex automatic systems are *not* always necessary for accurate automatic proportioning.

A simplified system made up of Richardson Scale batch weighing units, one for each ingredient, interlocked for simultaneous delivery—plus a Richardson Remote Stop Counter Panel may answer your requirements. And, what's more, with a Richardson unit you will get virtually continuous-stream delivery at the speed you want—with the kind of accuracy you would expect only from a batch weighing scale.

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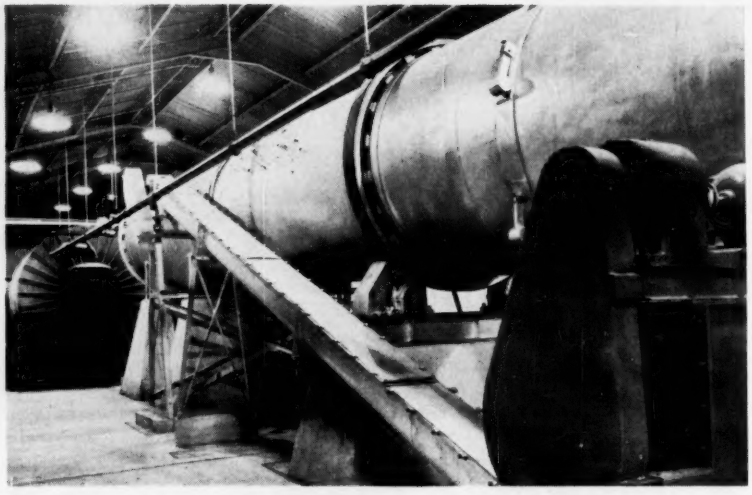
Drying beds give way to rotary dryers as . . .



Sewage Treatment Moves Indoors

Local governments faced with population increases are having their problems in planning for the future. Corpus Christi, Tex., recently saw the completion of such a plan when its second rotary dryer for sewage sludge went into operation at its Broadway plant—an item that industrial plants are also eyeing. It followed by a little over two months the startup of the same type of operation at its Oso plant (*above*).

The dryers, Standard-Hersey units built by Standard Steel Corp. (Los Angeles), are new to sewage sludge operations, will replace space-consuming outdoor drying beds at a cost of a little over half that of conventional flash-type dryers, says the firm. Space is important for the Broadway plant, which is located in a land-scarce industrial and residential section.

The Oso plant had no land problem but needed an all-weather disposal unit. Corpus Christi has an average rainfall of about 14-15 in./year. However, it all comes in a few deluges that temporarily, but completely, inactivate outdoor drying beds.

Flexible Operations: Both units are designed to produce a salable fertilizer

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by switching to isobutyl acetate

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Isobutyl acetate can be used interchangeably with normal butyl acetate in most applications. In nitro-cellulose lacquer formulations, for example, this substitution can be made without any apparent change in handling characteristics of the lacquer or in the physical properties of the resulting film.

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Using isobutyl acetate alone, your cost per gallon will probably be less than any usable combination of these solvents. And, moreover, a storage tank is freed for other purposes.

Eastman isobutyl acetate offers other advantages, in addition to lower cost and improved final product. The mild, pleasant odor of this solvent is preferred by most people over the stronger odor of many other solvents. Its price is stable. And because it weighs less per gallon than n-butyl acetate, you save over $1,100 on every 8,000 gallon tank car you buy at current prices.

As a result, isobutyl acetate is finding wide acceptance as a lacquer solvent in its own right, as well as a satisfactory replacement for more expensive solvents. For additional information on this Eastman solvent, contact our nearest sales office or write to EASTMAN CHEMICAL PRODUCTS, INC., Chemicals Division, KINGSPORT, TENNESSEE.

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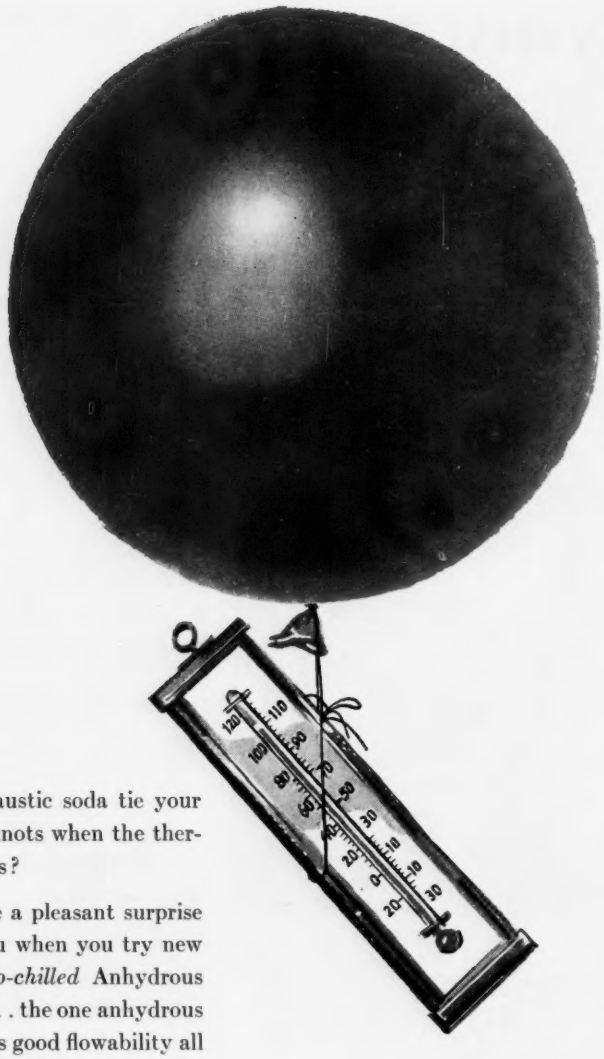
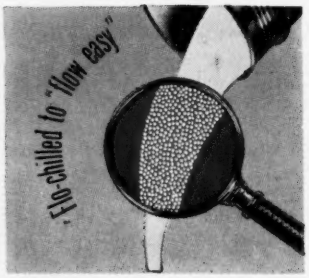


Does caking caustic soda tie your process up in knots when the thermometer zooms?

Then you have a pleasant surprise in store for you when you try new Wyandotte *Flo-chilled* Anhydrous Caustic Soda . . . the one anhydrous caustic that has good flowability all summer long (and, of course, in winter too).

It's made exclusively by Wyandotte to beat the old caustic-soda bugaboo of caking in hot, humid weather . . . so try it soon. Your Wyandotte representative or distributor will gladly arrange shipments to meet all your needs.



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WYANDOTTE CHEMICALS CORPORATION, WYANDOTTE, MICHIGAN • Offices in Principal Cities

product that is nondusty, friable, and of uniform particle size. Chemical additions—ferrous sulfate or lime to raise or lower pH, nitrogen- and phosphorus-containing compounds—can be made at the dryer. The sludge acts as a good carrier because of its bulk. The dryer is an excellent mixer—rotary action lifts the sludge, lets it fall vertically through the air stream many times as it travels the length of the dryer.

The sludge is received at 75-80% moisture content, is reduced to 6% moisture content in the 4x42-ft. Broadway unit at a rate of 680 lbs./hour of dried sludge. Dryer-furnace temperature averages about 275 F; shell temperature doesn't go above 200 F.

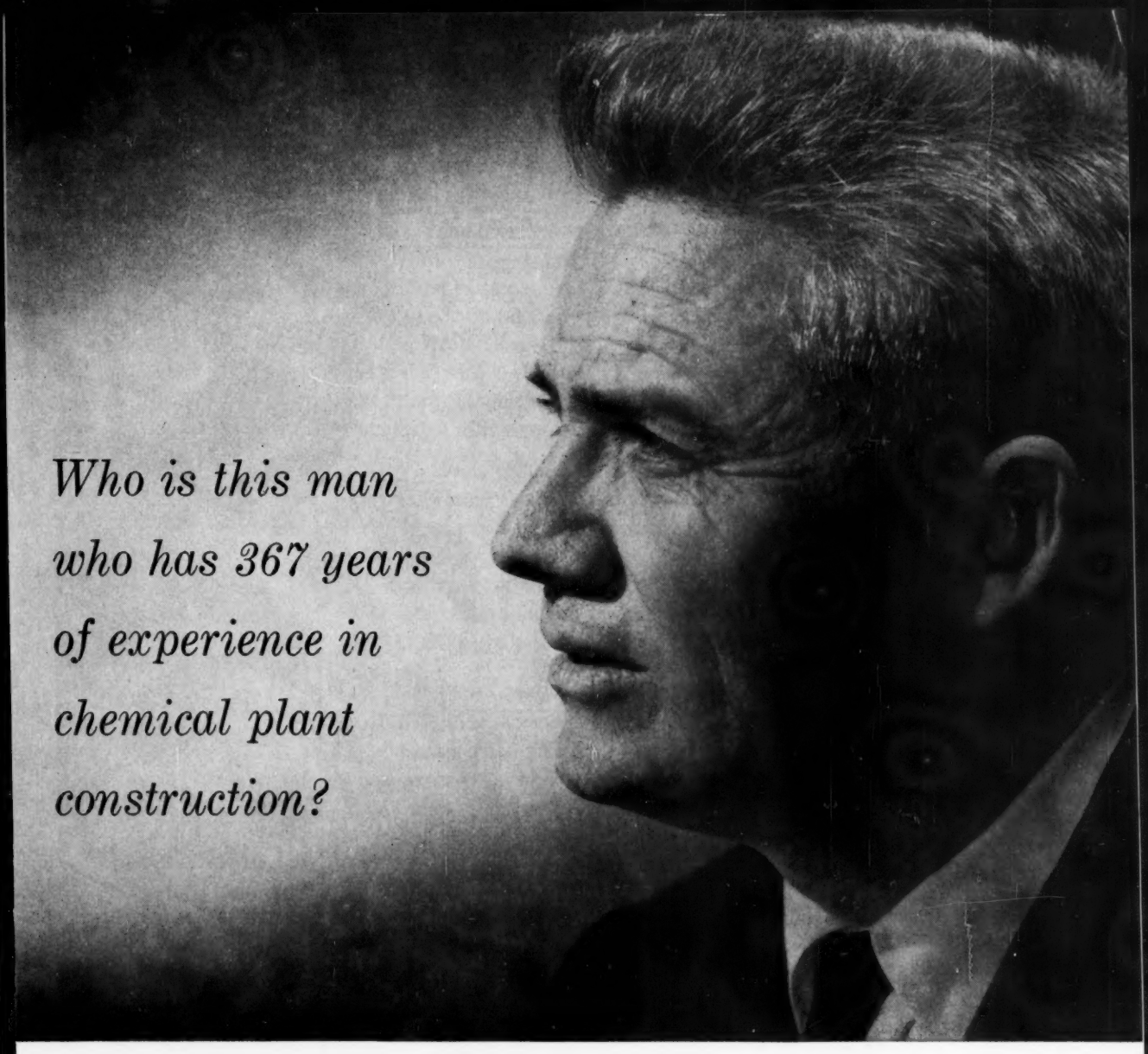
The furnace operates on any proportion of natural gas and digester gas from sludge treatment. Each gas has a separate burner, but both are operated from one control. The Oso unit is larger, has a capacity of 2,400 lbs./hour and uses straight natural gas as burner fuel.

Clicks Tell Story: The treated sludge is fed into the dryer through a pug mill. Condition of the incoming sludge is indicated to the operator by the clicking sound of small mallets mounted on two bands around the dryer. The mallets strike the shell with clocklike precision, help prevent sludge from sticking to the walls. Changes in the city's daily and seasonal routine are observed by changes in the pitch of the clicks.

The dried product is automatically sized and bagged as it drops from the dryer. A cyclone separates fines entrained in the air stream. The exit gases are directed through an odor control incinerator where they are subjected to a final burning before exhaustion to the air.

Both dryer-furnace and incinerator burners are ignited by pushbutton from the control panel board, are equipped with safety cutoffs. Thermolimit switches in the duct system protect against overheating.

Although Corpus Christi did not want complete automation because of extreme flexibility of operation required at both plants, Standard Steel says it is ready to supply it in future units. Other cities and industrial firms are studying the Corpus Christi installations, so Standard may soon get the automation bid.



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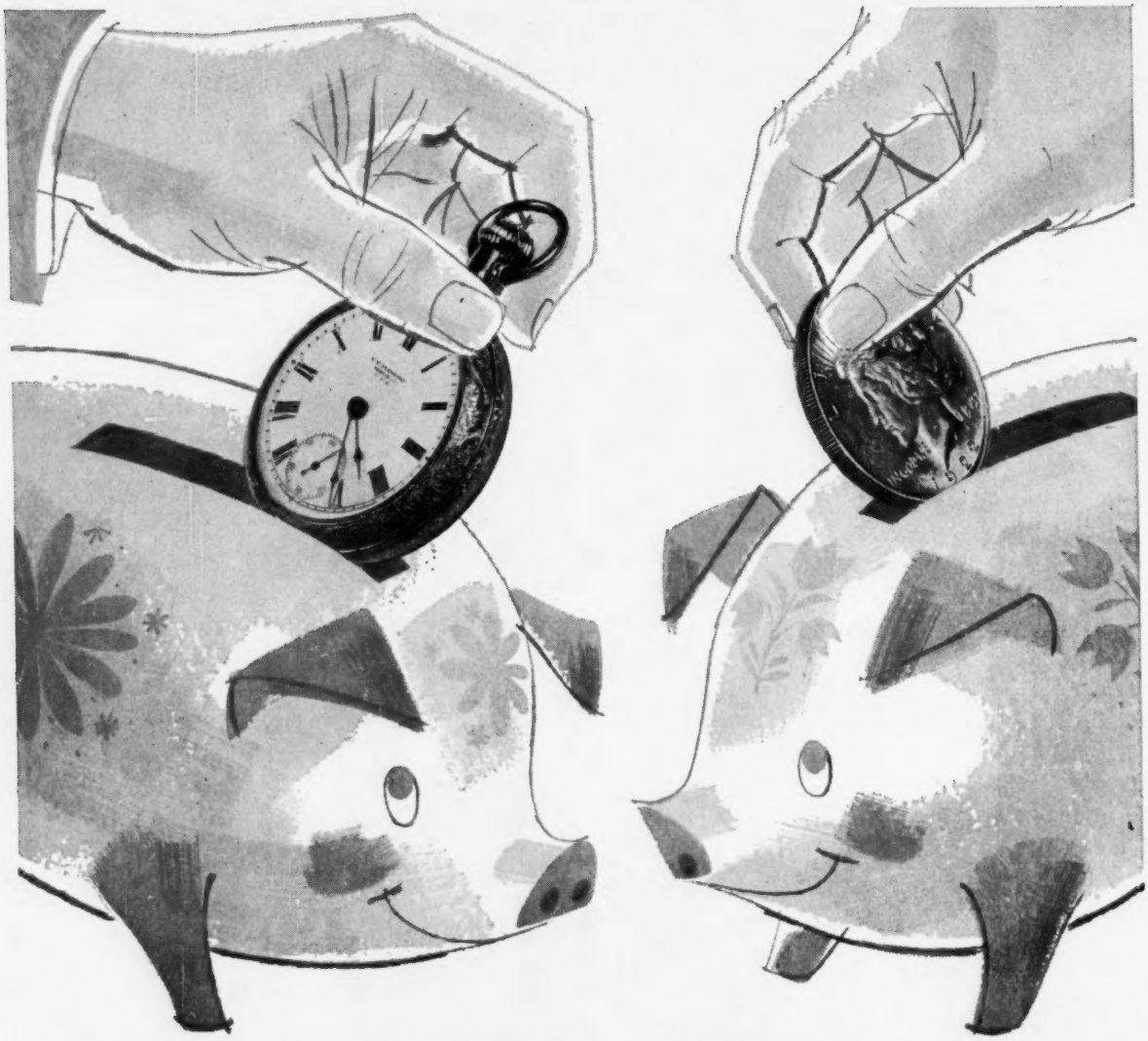

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Market Newsletter

CHEMICAL WEEK
April 27, 1957

The chemical industry may well reap a profit harvest as a result of the farm bloc's renewed drive to promote more research on industrial use of farm surpluses. The bipartisan Commission on Increased Industrial Use of Agricultural Products, which was set up last summer by Congress and the White House to study agricultural applications-research projects, came out with an "interim" report late last week—months ahead of schedule. Although the 160-page report essentially wraps up the job, the commission will go through the motions of filing a "final" report June 15.

Despite Congress' current economy-mindedness, the commission apparently believes that the lawmakers won't be adverse to spending heavily for crop research to develop new chemical and other industrial outlets. It will push for a permanent, $100-million/year program, including contracts with industry, reasoning that voters are getting fed up with annual $3-billion outlays for farm supports. Too, the group reports that the soil bank won't solve growing surplus problems.

How would the program help chemical makers and allied industrial firms? The commission disclaims competence or authority to outline in elaborate detail "the many projects that should be studied," but does make several "proposals for investigations in broad areas" that seem to promise fruitful results. Examples:

- Corn: as a raw material for plastics, textile and paper fibers, transparent films, including edible films needed in the food industry.

- Cereal and other grain products: for production of fibers and films, sizing and bonding agents, plastics and plasticizers, industrial chemicals, antibiotics, insecticides, synthetic fungicides.

•

First result of the new report, however, will probably be to kill any chance of sale of the Louisville butadiene-from-alcohol plant this year. The Senate Banking Subcommittee—strong for using the plant for farm research—finds in the commission's report just the kind of support it needs to hold back legislation now before it. The bill under consideration would permit sale of the installation for general chemical use to a firm such as Union Carbide.

•

Though most price-changing activity appears to have subsided after the mild flurry earlier in the current quarter, the same is not true for paint materials. This week, some grades of standard aluminum paste, chief ingredient of indoor and outdoor aluminum paints, are down about 3¢/lb. (The reductions follow last week's shaving of lead pigments litharge and red lead.)

Output of the aluminum pigment runs about 20 million lbs./year. "To remain competitive in the market" is ascribed as one major

producer's reason for reducing prices of four grades of its 325-mesh material to a basis of 41¢/lb. in c.l. quantities where that price had been quoted by another seller.

Prices of H acid are also being reduced. Cuts on the acid, used in making dyestuff intermediates, range from 2 to 10¢/lb., depending on quantity. The new prices: 90¢/lb., c.l. shipments; $1, l.c.l.

•

Though producers intend to hold the sulfuric acid price line generally throughout the country (*CW Market Newsletter, April 20*), rough competition in some localized areas is scuttling their resolve. That's true at the moment in the important acid-consuming region centering around metropolitan New York. Some tankwagon-quantity buyers of 66-degree sulfuric are being wooed with prices ranging between $1.50-2/ton under manufacturers' regularly scheduled delivery price (in the area) of $24.60/ton.

Onus for the price weakening is being shunted between older acid sellers in the region and a newcomer to sulfuric production. The latter, an ex-acid distributor turned maker, insists that it's simply matching prices offered in a few instances by others, and in addition, giving better service. Larger producers, however, are raising the cry that price-shading tactics are being used as a wedge into established markets.

Regardless of this localized muttering, the newcomer is apparently making progress, claims it has already sold large quantities on contract.

The present rough situation may simmer down, though. The ex-distributor is planning to build a number of new acid-consuming facilities in the area. Such units are slated to siphon a good chunk of its present sulfuric potential, contribute to a welcome market stabilization.

•

Where are vinyl paints headed? Upward, says James Dillon, National Starch Products vice-president. At the company's annual Resin and Structural Products Division sales meeting late last week, Dillon estimated that domestic production of vinyl paints should reach 30 million gal. by 1961. The comparable '56 figure: 10 million gal.

SELECTED PRICE CHANGES—Week Ending April 22, 1957

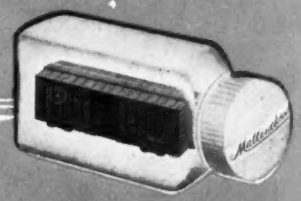
	Change	New Price
UP		
Stannous chloride, anhyd., dms., wks.	$0.012	$0.915
" " , hydrous, cryst., dms., wks.	0.01	0.80
Stannous sulfate, dms., wks.	0.012	1.05
DOWN		
Aluminum paste, standard, f.o.b. ship. pt., c.l.	$0.03	$0.41
H acid, dry, bbls., c.l., frt. alld., 100 pcs basis	0.10	0.90

All prices per pound unless quantity is stated.

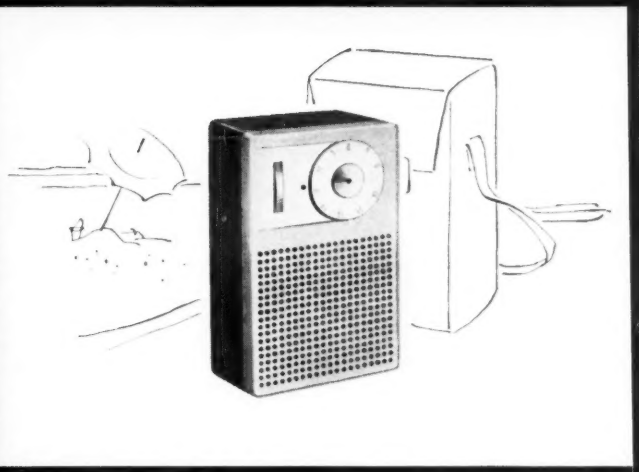
Mallinckrodt quality is the same...

IN CARLOADS FOR YOUR PROCESSES

AS IN BOTTLES FOR YOUR LABORATORY



MALLINCKRODT PROCESS CHEMICALS MEET DIFFICULT SPECIFICATIONS FOR MANY INDUSTRIES



Synthetic Rubber

Potassium sulfate supplied by Mallinckrodt plays a significant part as an electrolyte to control the degree of polymerization in the manufacture of synthetic latex rubber. While this is an important application, it is not the only one. Important too, is the use of *potassium sulfate* in the manufacture of dry cell batteries . . . gypsum wall board . . . and many other products.

Electronic Devices

In batteries *mercuric chloride* is used as a depolarizer, *mercurous chloride* is an electrolyte, and *mercuric oxide* is used as a depolarizer in certain special-use cells. Apart from the electronics field, *mercurous chloride* has such varied functions as a polymerization catalyst in the manufacture of polyvinyl chloride and as a fungicide in the treatment of seed potatoes. *Mercuric oxide* is used as an anti-fouling agent in marine paints.

Your particular application of these *and other Mallinckrodt industrial chemicals* may be different. Drop us a note on your requirements — *you might be better served by Mallinckrodt.*

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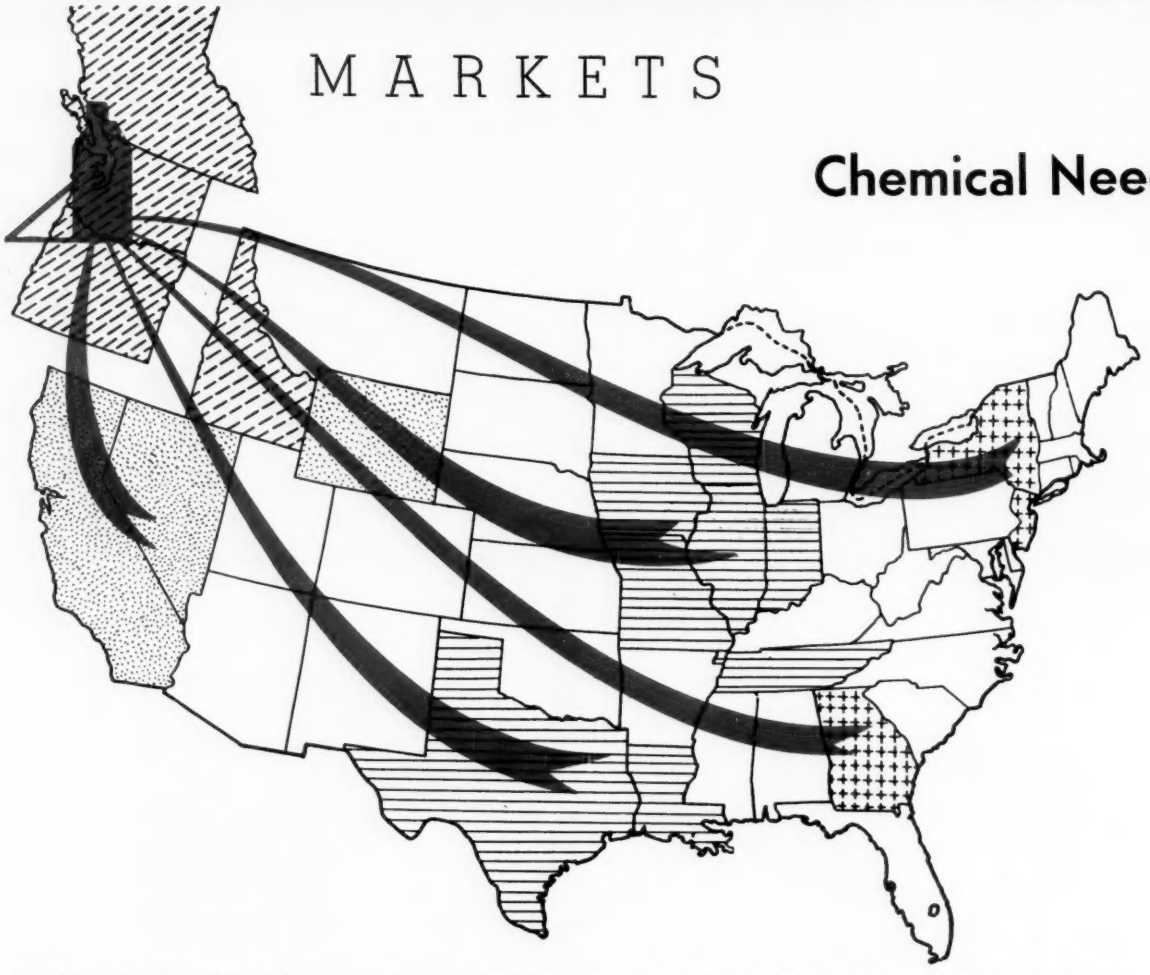
Chemical Needs



FROM ACROSS THE COUNTRY, chemical producers pour raw materials into the Pacific Northwest to feed. . .

Northwest Pulpers: Gluttons for Chemicals

Last year, more than 800,000 tons of chemical raw materials from all parts of the U.S. were chewed in the voracious maw that is the pulp and paper industry in the Pacific Northwest. The area represents a substantial enough portion of the $11-billion/year pulp and paper industry's production to give a fair percentage sample of the industry's over-all chemical needs, as well as be a substantial market in itself.

This week, market researchers could read a definitive report of the needs and the consumption of chemicals by 33 pulp and paper mills in Oregon and Washington, and the principal sources of each raw material. The report was prepared for Raw Materials Survey* (Portland, Ore.) by a three-man team from Oregon State College —seniors Frank Guthrie and Robert Nelson, working under the guidance of Charles Wicks, assistant professor of chemical engineering. Here's what they discovered:

From Near and Far: States that produced the chemicals were grouped into five major area segments to simplify reporting. The Pacific Northwest group, Oregon, Washington and Idaho (as well as nearby British Columbia) supplied a good share of the chemicals on which transportation costs are high.

This area was the source of the 33 mills' entire consumption of caustic soda, chlorine, chlorine dioxide, hydrochloric acid, limestone, wet-strength resins, sodium silicate, potato starch, sulfuric acid, diatomaceous earth, sodium sulfide, zinc hydrosulfite.

Other chemicals supplied primarily by producers in this area were: alum, with 94% of total requirements supplied; ammonia, 89%; foam killers, 84%; glues, 71%; hydrogen peroxide, 96%; burnt lime, 59%; dry sizing, 90%; rosin sizing, 76%; miscellaneous sizing, 75%; slime killer, 51%.

The Western grouping of chemical-producing states consists of California, Nevada and Wyoming. From it came all supplies of magnesium oxide and hydroxide, salt cake, sodium chloride, lyroid, and zinc dust used by the 33 mills, as well as 64% of the soda ash, 85% of all wax required.

The Central states of Illinois, Indiana, Iowa, Michigan, Missouri, Tennessee, Louisiana and Texas contributed all alpha protein, calcium chloride and starches (except tapioca and potato). From this area, too, came 83% of the general coatings used by the mills; 61% of the hydrated lime (38% of the lime material came from the Northwest itself); and 49%

*Raw Materials Survey was chartered in 1947 as a nonprofit corporation to boost industrial uses of Pacific Northwest raw materials. In early '55, the group's objective was broadened to permit employment consultants to write specific reports.

of the Northwest Pulp and Paper Industry

33 Plants Consumed This Chemical Tonnage in '56

Alum	33,109
Ammonia	24,695
Calcium arsenate	140
Calcium chloride	290
Caustic soda	71,798
Chlorine	113,959
Chlorine dioxide	466
Clay coating	32,376
Clay filler	21,238
Coating, general	634
Diatomaceous earth	125
Dyestuffs	548
Foam killers	696
Glues	1,361
Hydrated lime	4,665
Hydrochloric acid	165
Hydrogen peroxide	394
Latex	487
Lime, burnt	45,032
Limestone	104,960
Lyroid	101
Magnesium oxide and hydroxide	5,559
Manogal	17
Protein, alpha	400
Resins, wet-strength	4,642
Salt cake	95,163
Sizing, dry	9,852
Sizing, rosin	12,066
Sizing, misc.	6,040
Slime killer	567
Soda ash	945
Sodium chloride	951
Sodium peroxide	1,894
Sodium silicate	4,929
Sodium sulfide	132
Starch, corn	10,244
Starch, potato	14,679
Starch, tapioca	1,871
Starch, misc.	2,272
Sulfur	146,652
Sulfuric acid	2,182
Titanium dioxide	3,766
Wax	3,970
Zinc dust	340
Zinc hydrosulfite	212

. . . and Used, Among Others, These Specifications

Alum—
Liquid, commercial-grade, 17% aluminum oxide (dry basis), low iron content

Ammonia—
Anhydrous, commercial-grade

Caustic soda—
Liquid, minimum 76% sodium oxide by weight (dry basis)

Chlorine—
Standard commercial liquid

Clay coating—
Moisture content 2.5-4.5%, pH 4.5-5.5

Foam killers—
Low crystallization at low flow temperatures

Hydrated lime—
Not over 1.5% magnesium

Hydrochloric acid—
20 degrees Bé

Lime—
99% acid soluble, iron and aluminum oxides less than 0.5% total weight, calcium oxide content over 97%

Limestone—
96% calcium carbonate, less than 0.7% iron and aluminum oxides, less than 2% magnesium carbonate, over 98% acid soluble

Salt cake—
98% minimum sodium sulfate content, less than 1% moisture, less than 1% free sulfuric acid

Soda ash—
Minimum 97% sodium carbonate, minimum 57% sodium oxide (dry basis), less than 0.5% insoluble foreign matter, freely water soluble

Sodium peroxide—
Technical-grade, granulated

Sodium silicate—
Brands vary; "N" and "O" grades cited

Sulfur—
99.5% pure, maximum 0.5% moisture, maximum 0.3% insoluble carbon disulfide

Sulfuric acid
Two grades—93% and 98%—specified

Wax—
Highest available purity

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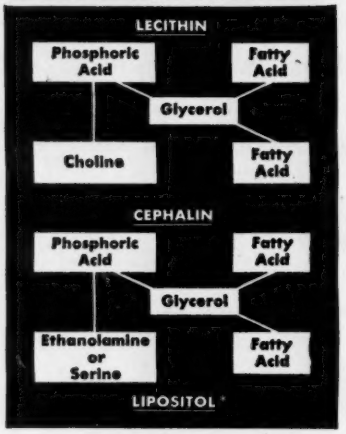
Products from Corn and Soybeans



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*Molecular structure of Lipositol has been indicated but unconfirmed. Material does contain:
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of the sulfur (46% originated in the Western group of states, and 5%, in the Northwest).

From the Eastern group, comprising New York, New Jersey and Georgia, came all clay coatings, clay fillers, sodium peroxide, and all but 4% of total dyestuff needs. From here, too, came 55% of all latex used (33% and 12%, respectively, were made in the Central states and in the Pacific Northwest itself), and 75% of titanium dioxide (21%, 2% and 2% respectively, came from Central, Western and Pacific Northwest areas).

Foreign countries (the fifth area-group) provided all tapioca starch, all manogal, 50% of the calcium arsenate and 15% of the general coatings.

Future Needs: During the past few years, many paper companies were enthused about do-it-yourself chemical operations such as the making of chlorine and caustic; but there are indications now that the trend will be away from such captive operations (*CW, March 2, p. 13*). To the degree that this becomes true, outside producers of pulp and paper chemicals will stand to benefit.

How fast will pulp and paper chemical requirements grow in the next few years? The Oregon State researchers declined to predict the future of raw material requirements for 1960 in their report because of "the uncertainty of knowing the types of paper products desired that year." The authors did say, however, that several firms estimate that their individual chemical needs will increase more than 10% by 1960, compared with '56 requirements.

Researcher Wicks, while discussing the subject with *CW*, amplified a prediction of "quite an increase" in paper production (and hence, in chemical needs) by noting that several sizable new units are already under construction in the Washington-Oregon area. These include Weyerhaeuser's new plant at Cosmopolis, Wash., the Georgia-Pacific plant at Toledo, Ore., the doubling in size of the Western Kraft plant at Albany, Ore., and new plants under construction in Klamath Falls, Roseburg and Bend, Ore.

Such expansion, of course, is but one indication of the over-all betting by pulp and paper makers that the future market for their products will continue to show a growth greater than that attributable to population growth alone.

Pulp and paper producers, while new plants go up, admit there will be some overcapacity by the end of '58. The threat is expected to be only temporary, however, and will disappear as per-capita consumption of paper continues to increase—a heartening thought for chemical raw material suppliers throughout the country. Their stake as a supplier to the pulp and paper industry is substantial.

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VARCUM'S STANFORD: 'Chances are, your beer can is coated with our resin.'

Small Firm in Big Business

One day last week, Jerry Stanford, vice-president-without-portfolio of Varcum Chemical Co. (Niagara Falls, N.Y.) was enthusing about a customer that ordered less than a truckload of phenolic resins. "That company's going places and we're going to be in solid with them. They couldn't get anybody else to take them seriously—here they talk to a vice-president, get all kinds of information rounded up for them, even a salesman."

Stanford was outlining the way a small, "multimillion-dollar rather than hundred-million-dollar" specialty resins firm is able to stay alive in the fiercely competitive phenolic resin business.* The equalizer: offering personalized service and standing prepared to make resins to fit specific needs.

Varcum—unusual in the resin business because it handles only phenolics—claims to call on 100% of all its prospects on a regular basis. It has only six salesmen, all graduate chemists. In addition, Stanford, a chemical engineer, spends much of his time on the road, as did founder and major stockholder George E. Lewis, when he was more active in the company. Backing them up is Roland D. ("Doc") McDonald, a physical chemist who's now vice-president in charge of research and development.

"If you are in first," says McDonald, "and if you maintain uniformity, you're all right." In an effort to get in first, Varcum sends out an average of four samples of new resins a day, last year sold 130 different products.

Big Friends: Firms that order less than a truckload are not typical Varcum customers. Stanford admits, however, that many of his competitors consider his firm a "scavenger, picking up little accounts they aren't interested in."

It's true that Varcum will try harder than most for the less-than-truckload order, but actually the company has found that it is most successful in dealing with the big customers. "If they have big enough labs to test all the resins we send them," says McDonald, "we can usually come up with something that fits their needs."

Among Varcum's customers are Carborundum, Norton, Behr-Manning, Minnesota Mining & Mfg., Du Pont, Pittsburgh Plate Glass, Thermoid, Raybestos-Manhattan, and others of similar size. The company claims to sell to most important customers in the fields it covers: grinding wheels, coated abrasives, brake linings, can linings, varnish, and fiberglass insulation. Each field presents a different set of problems.

With abrasives makers, for example, who account for 42% of Varcum's sales, quality and uniformity are all important. Grinding wheels are almost always custom-made to meet industrial customers' exact specifications; wheel makers have to work with resins with known qualities. Also there is the specter of law suits arising from exploding grinding wheels, often a product of resins that aren't quite right. "If we offered a resin to the grinding wheel makers at half price but couldn't convince them it was exactly the same as they'd been using, we wouldn't make a sale," Stanford avers.

Maintaining this kind of uniformity is one of McDonald's prime responsibilities. He has developed simple, easy-to-follow and easy-to-duplicate manufacturing processes for the resins. Also he keeps a close eye on control and purchasing of raw materials.

Who's Got the Secret? Brake lining makers, whose purchases account for 16% of Varcum's sales, differ from abrasives people in two big ways. Since lining makers sell to Detroit, price is of primary importance. Largely because of questions of price, not only does Varcum find itself in-and-out with its customers, but the customers, in turn, are in-and-out with their auto-making customers.

*Here's the way Varcum ranks its competitors: Bakelite is by far the biggest, meeting Varcum in all areas; Monsanto is second, active mainly in grinding wheels; Durez (Hooker Electrochemical) is third, strong in brake linings and a few specialties; Schenectady Varnish is fourth, big in brake linings and varnish; and Catalin is fifth, strongest in insulation accounts. Also often encountered are Borden's Durite Division, and Reichhold.

some things we just don't talk about!

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For another, we can only report in general terms that *many* famous pharmaceuticals and unusual organic and inorganic chemicals are produced regularly in NYQ plants . . . *in strict confidence!* The versatility of NYQ technical staffs and facilities makes custom manufacturing a natural. So, if you want to market a product without investing in specialized facilities, talk to NYQ about it!

Of course, it's no secret that NYQ supplies a full line of fine chemicals of outstanding quality. Their coast-to-coast warehouses ship over 2,000 items required by the pharmaceutical, feed, food, cosmetic and other industries. And they're famous for fast service!

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McDONALD, STANFORD: 'Without McD

Furthermore, unlike the more mature grinding wheel business, which sees some technical cooperation between makers, brake lining people are secretive and highly competitive. One freshman Varcum salesman, after his first day of making the rounds of brake lining makers, remarked: "Each man we met thought he was the one genius in the world who knew how to make a brake lining."

Protective coating makers, including makers of can linings, take 31% of Varcum's production. But—except for producers of can linings—they're of declining importance as customers. Alkyds, melamines, and ureas are supplanting phenolics in varnish making, mainly because, unlike phenolics, they don't yellow with age. Varnish resins were Varcum's first products when it started in 1933; it didn't get into abrasives until 1940.

Varcum once toyed with the idea of getting deeper into the glass-fiber insulating business. It bought a site in Kansas City with the idea of building a unit to supply Owens Corning's big plant there (which probably uses more phenolic resins than any other plant in the U.S.). It has since decided against it. Says McDonald: "Anybody that wants the insulation business can have it." His reason: high competition (because these resins are easy to make) and low profit.

Varcum has a Canadian plant in

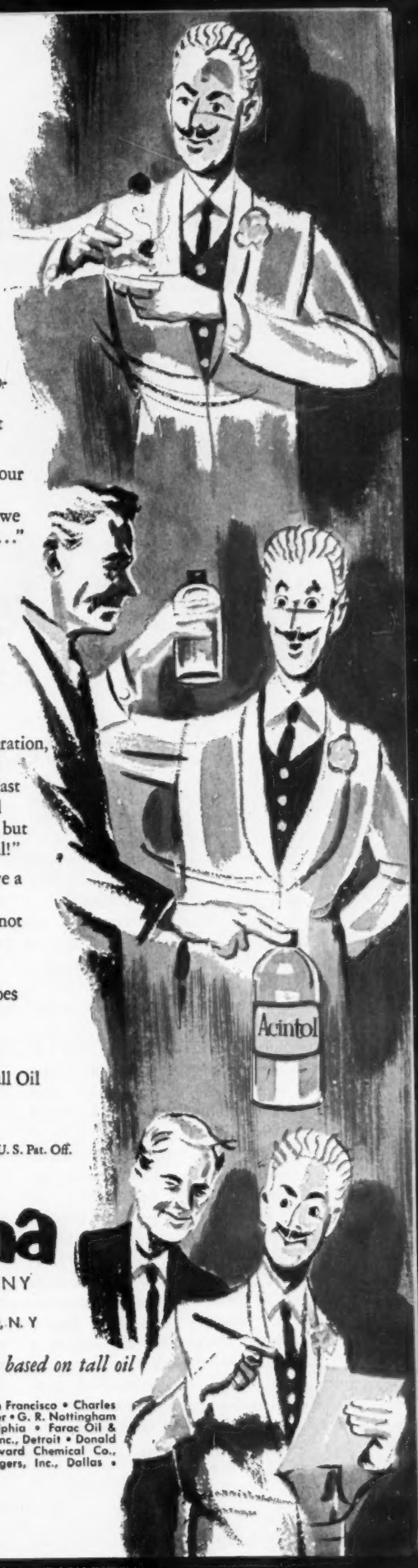
,' says Stanford, 'we would be in trouble.'

Lindsay, Ont., which makes molding compounds primarily. Its biggest customer is Northern Electric, the Canadian equivalent to AT&T's Western Electric, maker of 'phone receivers.

Phenolics or Nothing: Varcum expects to grow in the future, but not dramatically. It has faced the possibility that technological development might one day wipe out the phenolic resin business. Varcum, as the only company of any size at all which sticks strictly to one resin type, would obviously suffer. From time to time, it considers expanding into other fields, but has always rejected the idea. Such expansion, thinks Stanford, would make impossible the currently successful way of doing business. "Name any prospect and I can tell you immediately what resin it buys, how much, what its credit position is, what its problems are, whom to see, what its street address is, even what hotel to stay at."

But the firm's smallness has disadvantages—principally a lack of depth in management. For example, Stanford discounts the possibility that Varcum might be bought by another company. "Without the management, they wouldn't be buying much—and neither Doc nor I want to work for a big company." Varcum's (and Stanford's) biggest worry right now: what would happen to the company if something were to happen to McDonald.

The man who rolled his own



Then there was this P.A. of *exceedingly* individual tastes. Couldn't abide ready-to-wear suits. Had his shirts hand-stitched. Even rolled his own cigarettes — couldn't find any packed to his liking.

You could see it coming when we made our first call. "We use only raw materials *exactly* suited to our processes. Not that we don't *like* to save money, you know, but..."

"Of course," we said, fetching up an ambrosial sample, "and we think our ACINTOL* FA — Tall Oil Fatty Acid is tailor-made for your alkyds." He picked up the bottle gingerly. *"Tailor-made?* But, remember, we need excellent color stability." We said, "Couldn't fit better."

He frowned. "But odor is a vital consideration, and naturally we couldn't..." We lifted the lid, he sniffed carefully, then took a last deep breath. "But isn't it —" he blanched —"cheap?" We thought he had us there, but we said, "Well, let's say it's — economical!"

"Young man," he said, "you seem to have a perfect understanding of our particular needs," and signed on the dotted line — not only for ACINTOL* Fatty Acid, but for our ACINTOL* D — Distilled Tall Oil.

If you are particular, too, about what goes into your alkyds, esters, emulsions, fatty acid amines, non-ionics, primer surfaces for automobiles, sulfonated oils or the like, look into ACINTOL* Tall Oil Products. It's so easy to get samples, typical analyses, technical assistance — just ask us!

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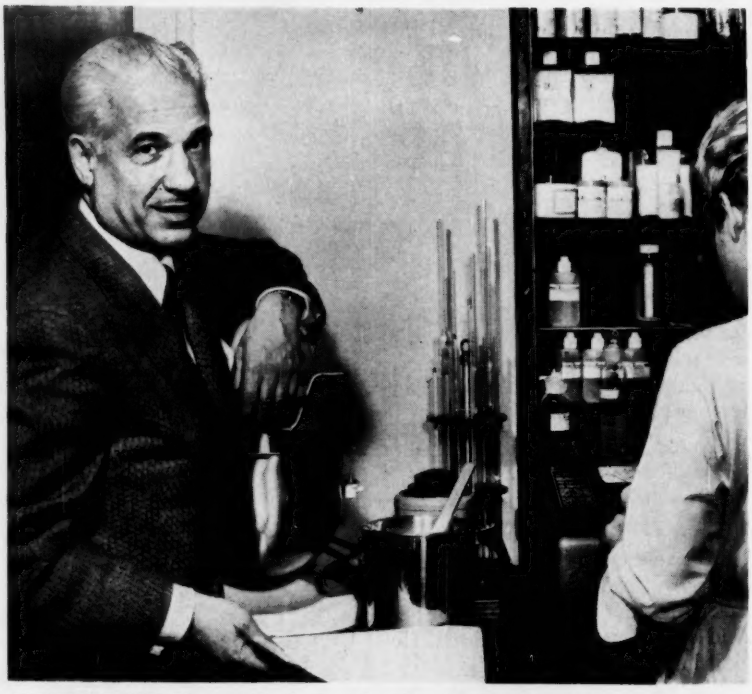

AMSTERDAM: New profits by tapping the tired-foot market.

Try for an Untrod Market

As success with a number of new items shows, chemical specialties makers are generally pretty quick to spot the potential markets for novel products. But occasionally, they overlook a good bet, and according to Van Ameringen Haebler's cosmetic expert, Jerry Amsterdam, almost all have missed the chance to cash in on a new sort of specialty for the feet.

Here's how Amsterdam (whose firm supplies perfume ingredients to such specialties makers) explained it to *CW*—and also how one specialties maker hopes to show that it hasn't been caught napping in trying to crack this field.

The type of product Amsterdam envisions isn't a specific medication or remedy. It might be termed a sort of soothing lotion—perhaps akin to aftershave lotion—which, although beneficial, is hardly a necessity. It wouldn't buck the market for products such as athlete's foot treatments, dusting powders, corn and bunion remedies, which currently sell at a $20-million/year pace.

- It would be formulated with such ingredients as fungicides—to help prevent athlete's foot; mild topical anesthetics—to soothe feet; cooling compounds like menthol; and a faint but refreshing scent.
- It should be packaged, Amsterdam thinks, in containers emphasizing convenience—the aerosol can or the squeeze bottle. Price probably should not be under $1.
- And fully as important as formula and package, it should be heavily advertised and promoted. To reach substantial size, the market would have to be created and nurtured carefully, Amsterdam says.

It Costs Money: Presently on the market, Amsterdam points out, are perhaps half a dozen products that pretty well fill his specifications—Bounce, a squeeze-bottle-packed material made by Bounce Inc. (Dayton, O.) and Foot Note, made by Larson Laboratories (Erie, Pa.), to name just two. But sales of these, and all others on the market, are probably not much over $100,000/year now. The problem, quite plainly, has been that of promoting the products vigorously—and this is sometimes an expensive proposition.

Growth Step: C. R. Larson, whose Foot Note is roughly within Amsterdam's outline, can bear out Amsterdam's theory that advertising has a lot to do with the success of a product of this sort.

His Foot Note, sold in a three-state area, had never been advertised. The sole promotion venture occurred some time ago, when Larson contributed $1,000 toward cooperative advertising with a New York department store. He found then that ads paid off well, but has only recently been able to make the move toward following this up.

This week, Foot Note will be featured on Erie's TV stations in spot ads—animated cartoons extolling a theme of "happy feet." The 13-week program of spot ads should prove whether or not foot lotions can achieve lusty sales. It should also help the product make a break away from the classification as a competitor of such athlete's foot specifics as Wallace & Tiernan's Desenex and Rexall's Fungarex.

Probably as hopeful as Larson about the possible success of Foot Note is Amsterdam. His interest isn't in the one specific product, but in the potential market for perfume ingredients that success of the foot lotions might have. Van Ameringen Haebler (which is watching Bounce and Larson) thinks it has its foot in the door as the perfume supplier.

Hold the Starch

A new method of printing vat dyestuffs on cotton and rayon fibers has been worked out by Badische Anilin- & Soda-Fabrik (Ludwigshafen, Germany).

Touted advantage of this new process lies in "hand" of the finished goods: it is said to make goods soft; brilliance of colors is increased, hard encrustation of printed dye-paste prevented and lack of print-definition eliminated.

Improvements are attributed to the replacement of standard thickening agents such as starch or tragacanth by viscous emulsions. The dyestuff is stirred with water into heavy benzene, and a special emulsifier, "Luprintol K", is added. The emulsion is adjustable to any desired consistency.

License to use the new dyeing procedure is automatically obtained when the consumer buys Luprintol K.

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Write: Celanese Corporation of America, Chemical Division, Dept. 752-B, 180 Madison Avenue, New York 16, N. Y.

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Water, % wt., max.	0.15	0.15	1.5
Specific Gravity @ 20°/20°C	0.9330-0.9340	0.9170-9180	0.8555-0.8565
Acidity as acetic acid, % wt., max.	0.02	0.1	—

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SUCCESSFUL COMBINE: Rug cleaner goes into applicator handle.

Handle Holds the Cleaner

Latest cleaning device with a detergent reservoir in the handle is a combination sponge-brush unit for cleaning rugs. Developed by Servicemaster (Chicago), this household aid permits the housewife to foam-scrub carpets without getting on her hands and knees. Dilute detergent is poured into the handle, which feeds chemical to the sponge through a shutoff valve. Brush attachment is used to restore the nap.

Middleweight TKO

Only heavy-duty brake fluids are safe in most 1955, '56 and '57 model cars according to a recent pronouncement of the Society of Automotive Engineers. As a result, SAE has withdrawn its specifications for the moderate-duty fluids.

Behind the recent move is this reasoning:

A '57-model car weighing 4,000 lbs. can, when stopped, repeatedly generate brake-fluid temperatures of 250 F or greater. And at this temperature, moderate-duty fluids can fail. (SAE's spec 70-R-2 sets the minimum boiling point for moderate-duty fluid at 235 F.) Failure is due to the fluid's vaporizing and forming a cushion, which prevents transmission of pressure from foot to brake shoe.

Although all new cars have heavy-duty brake fluid in them when delivered, service men sometimes dangerously lower the boiling point of all the fluid by the addition of very small quantities of moderate-duty fluid.

Eight states have already forbidden the sale of all fluids that fail to meet SAE 70-R-1 heavy-duty specifications, others are expected to follow now as a result of SAE's withdrawal of its moderate-duty specifications.

Up from 'Down Under'

Some recent innovations from Australia:

- To control the rate of setting of calcium sulfate plaster (plaster of Paris), add small quantities of polyacrylic acid, polymethacrylic acid or carboxymethyl cellulose (1 ppm. or less), which retards crystallization.
- New twist in vapor-phase inhibitors is paper impregnated with dicyclohexylammonium caprylate, which is said to give protection comparable to that afforded by the commonly used dicyclohexylammonium nitrite.

PRODUCTS

Push Off: Quick to capitalize on the USDA's endorsement of diethyl toluamide as an all-purpose insect repellent, S. C. Johnson (Racine, Wis.) has moved its new product Off! into national distribution. Johnson is offering the repellent (*CW, March 9, p. 104*) in two forms: as an aerosol (in a 5-oz. container that sells for $1.19) and in cosmetic-type, 1½-oz. bottles that sell for 75¢.

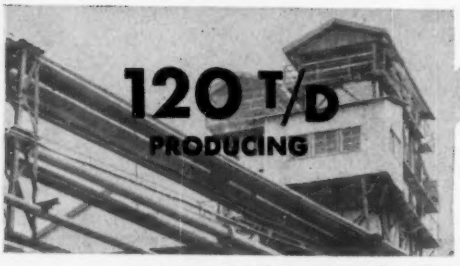
•

Routs Roaches: Help in repelling roaches is one of the claims put forward for Tabutrex, a repellent now being manufactured by the newly formed Glenn Chemical Co. (Chicago). The material (main ingredient: diethyl succinate) is a colorless and odorless liquid and can be safely formulated in water, oil, or wax. The company says that wooden cases sprayed with Tabutrex have remained

UREA

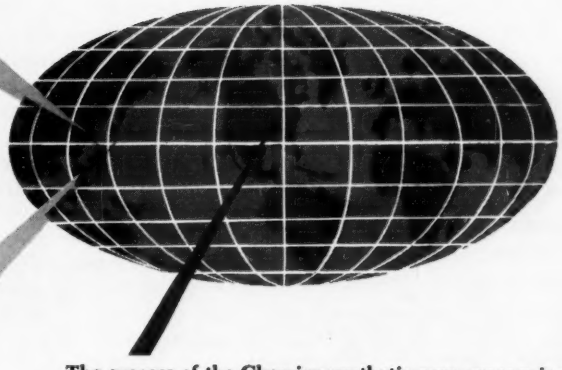
...the commercially proven CHEMICO PROCESS

A view of the 90 tons per day Urea Plant at Niigata designed by Chemico for Nippon Gas Chemical Industries Ltd.



A part of the 120 tons per day Urea Plant designed by Chemico for Sumitomo Chemical Company Ltd. at Niihama.

NOW...200 T/D
under contract in North America



The success of the Chemico synthetic urea process is reflected in the company's record in Japan. The 40 tons per day plant built for Sumitomo Chemical Company at Niihama in 1952 has been expanded twice to 120 tons per day operation. On the basis of this record, Chemico was awarded a contract by Nippon Gas Chemical Industries for a 90 tons per day plant at Niigata. This plant started on stream in the spring of this year. Now . . . Chemico has been awarded the contract for a 200 tons per day Urea Plant in North America, utilizing the Chemico process. Production experience at the Sumitomo plant has shown the following advantages of the Chemico urea process:

- High conversion of the carbamate to urea per pass.
- Simple recovery of the excess ammonia in liquid form without additional compression.
- Efficient recovery of the ammonia from the unconverted ammonium carbamate for full recycle to obtain overall high ammonia yield.
- Produces spherical free-flowing granules which require no coating agents.
- The Chemico process can be used for the production of urea in fertilizer and industrial grades.

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SPECIALTIES

repellent to roaches for 10-16-week periods. Flies are also said to have an aversion to the material.

•

Cone Cans: Continental Can has announced availability of six sizes of cone top cans to hold automotive, industrial and nonfood household products. Capacities range from 4 to 33.5 fl. oz. Depending on size of can, they are available with either beaded or screw necks.

•

Who's Got What? Chemical Specialties Research Labs. (New York) has its '57 catalog ready for distribution. The catalog lists reports on over 1,500 tradename chemical specialties. Included are analyses of many types of cleaners, cosmetic preparations, detergents, waxes, bleaches, etc. The service is primarily intended for those specialty manufacturers who don't have facilities for making analyses of competitive products. In addition, the company furnishes a subscription service, providing five new analyses each month.

•

Nonfading Glitter: Tarnish-resistant bronze, gold and copper vinyl inks in the VC-4200 and VCV-4500 series for gravure and valley printing applications, respectively, are currently being offered by Claremont Pigment Dispersion Corp. (Long Island, N.Y.). Stated advantages: resistance to light exposure and abrasion, superior brilliance, nongreening.

•

All-Weather Asphalt: A line of additives for asphalt developed by Armour & Co. is said to make possible the paving of roads in wet weather. Previously, asphalt's poor bonding ability in the presence of moisture has slowed down many road-building projects. The new additives are salts of polyamines derived from tallow, which produce a water-resistant film of asphalt on either wet or dry hydrophilic aggregate. The additives are called Redicotes.

•

Shrinkable Wrapper: Du Pont offers a new shrinkable form of its Mylar polyester film for wrapping meat and poultry. Wilson & Co. is first to use it, for a new line of hams. Once the shrinking process is completed, the film is said to have "excellent" dimensional stability. Other essential properties of Mylar are also said to be retained (durability from —80 to 300 F, high tensile strength, resistance to tearing and to oils and greases).

•

Moderate Glue: Said to be particularly suitable for use in glues for "moderate" exterior applications (protected doors, furniture, etc.), a new fortifier for conventional urea resin liquid wood glue, Modifier MO-614-L, is being produced by Borden Co. It is said to be mouldproof, light in color, capable of withstanding a three-hour water boil test.

•

Safely Off: Greater safety to personnel and to metal surfaces is claimed for a dry form of rust remover now being introduced by Oakite Products (New York). It's a powdered acid material called Drycid, which is added to water in ratios of 8 oz. to 1 gal. or more of water. It can be shipped in fiber drums, is mild and doesn't fume, the company says.

•

Bright Bath: Zinc-Kote, a new zinc brightener being marketed by Smoothex Corp. (Cleveland), is designed to improve barrel plating of small parts. Added to the plating bath, the product is said to produce bright zinc deposits on the entire surface of all the parts, saving a subsequent dipping for added brightness. Nonmetallic itself, the product is said to be compatible with all zinc barrel solutions.

•

All-Purpose Stabilizer: What it calls the "first all-purpose organotin stabilizer" for use in plastics has been introduced by Metal & Thermit Corp. (Rahway, N.J.). It's called Themolite 25 and is said to provide light and heat stability for virtually every polyvinyl chloride and copolymer resin now available.

•

Scratchproof Plastic Lenses: House of Vision (Chicago, Ill.) is now offering spectacles with plastic lenses claimed to be resistant to scratching. Special heat-molding techniques used with an allyl resin compound produces the scratch-resistant surfaces in the lens. And, when housed in nylon frames, the lenses allow construction of durable spectacles weighing less than 2 oz. Any spectacle lens, including bi- and tri-focals, but excepting contact lenses, can be made from the allyl resin.

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Is your bag the ideal package for your product, in size and construction, or is it a carry-over from the past?

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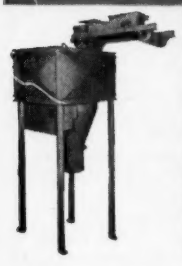

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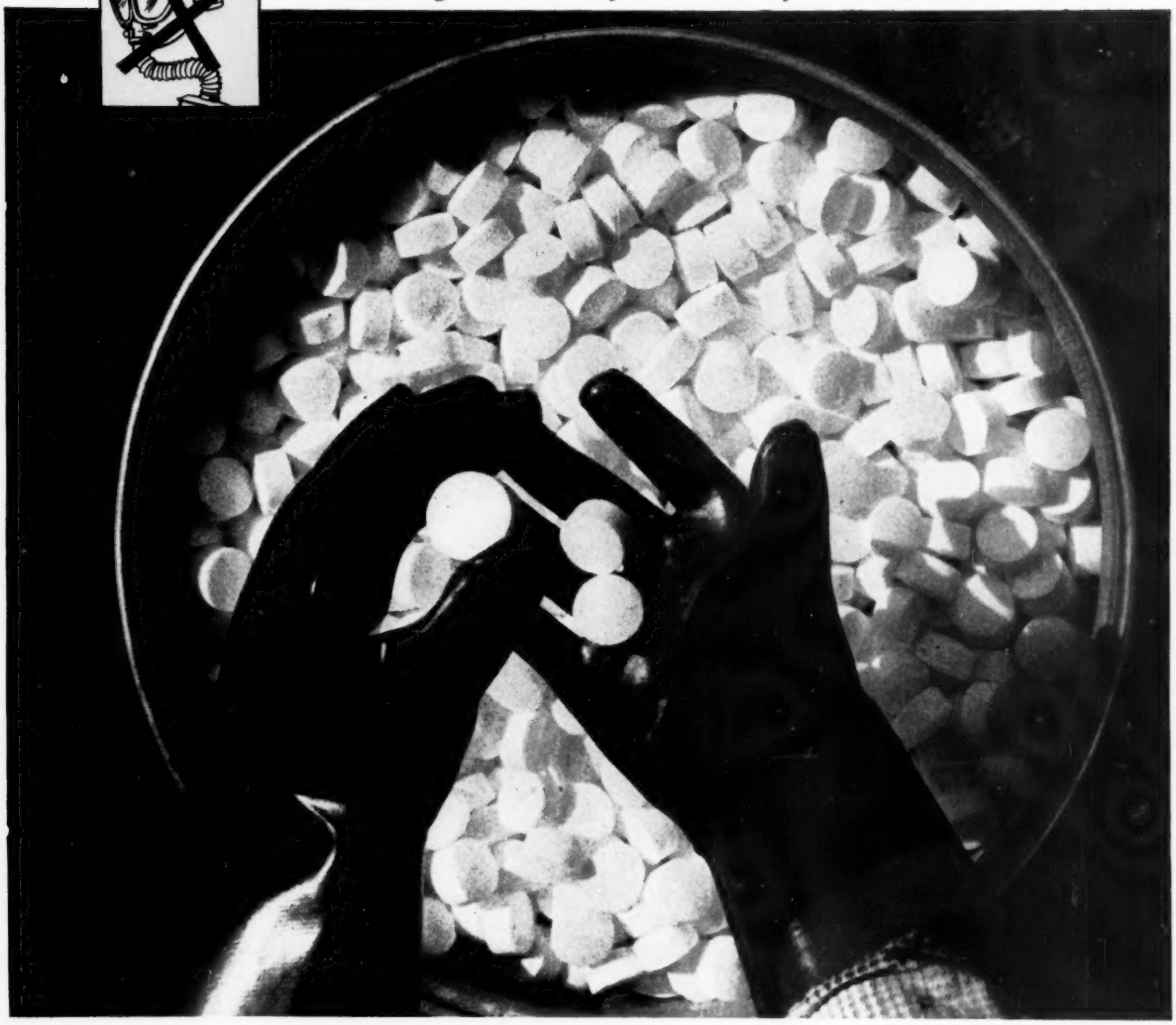

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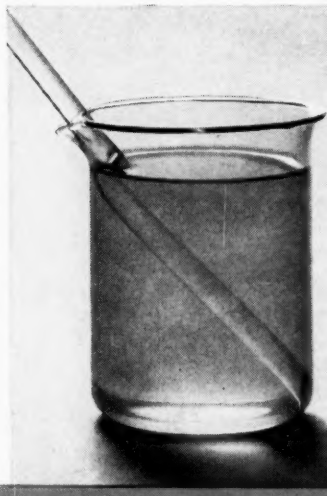

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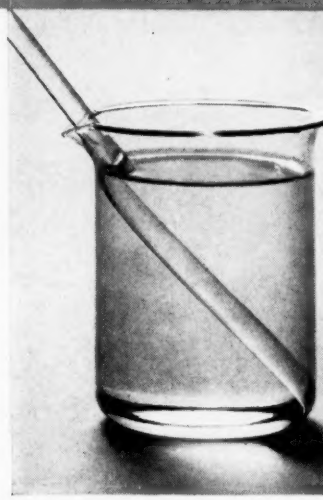

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